amateur radio



YOL. 47, No. 3

MARCH 1979

FEATURED IN THIS ISSUE:

- * SOLID STATE SWITCHES FOR VIDEO AND RF
- ★ LINEAR AMPLIFIER FOR THE IC 202 AND IC 502
- **★** MODEL 15 TELETYPE INFORMATION
- * WIA AWARD UPDATES
- * RED COSS MURRAY RIVER CANOE MARATHON



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amateur radio

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CONTENTS

37

62

33

33

34

35

38

TECHNICAL		CQ Outer Space Short Course in I
Amateur Satellites	32	The Man Behind to The Red Cross M
Commercial Kinks — FRG7		Marathon — Im
Modifications	16	The Ron Wilkinso
Fox Hunting - Manual Gain Control		Award
for the IC202	11	WIA OSL Bureau
A Linear Ampillier for the IC202 and the IC502	10	Newcomers and
NOVICE NOTES		
Soldering Hint	30	
80 Mx Activity	30	
Egg Carton Storage	30	DEPAR
Pirates on 10 Metres	30	DLIAN
Portable Army Wireless Sets of World War II — The AT5	31	Around the Trade Awards Column
Solid State Switches for Video and RF	7	Book Review
Some Information on the Model 15	15	Contests

GENERAL

Technical Correspondence

Try This - Homebrew OSL

Amateur Radio Intruders Amateur Radio Licensing In Canada Awards Update -

Australian VHF Century Club Award Worked All VK Call Areas (VHF) Award

Heard All VK Call Areas Award Worked All VK Call Areas Award Worked All States Award

18 urse in Public Relations A Behind the Microphone 23 Cross Murray River Cance on - Impressions of a VK5 24 Wilkinson Achievement R Bureau Information for mers and Others 23

PARTMENTS

42

43

46

54

Book Review	43
Conlests	53
Hamads	53
International News	51
Ionospheric Predictions	53
Letters to the Editor	52
Magazine Index	46
Obituary	54
QSP	4, 6, 42, 46
Silent Keys	54
VHF-UHF - an expanding work	3 44
WIANEWS	44
WICEN	51

ADVERTISERS' INDEX

You and DX

COVER PHOTO

You can't start them too young. Tom Dexter, three-year-old son of Tony Dexter VK5DL, tunes 20 metres on the station receiver - a Hallicrafters SX100.

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and 435 (FM) MHz 09.30 EST. NT: President - Dick Klose VKSZDK Vice-Pres. - Barry Burns VK8DI Secretary - Graeme Challinor VK8GG

Broadcasts— Ralay of VKSWI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VKSHA on 3.555 MHz 1000Z almost every day.

Postal Information: VK1 — P.O. Box 48, Canberra, 2600. VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.95-14.00h). VK3 - 412 Brunswick St., Fitzroy, 3065 (Ph. 103) 41 3535 Weekdays 10.00-15,00h).

VK4 - G.P.O. Box 538, Brisbane, 4(4): VK5 - G.P.C. Box 1234, Adeleide, 5001 - HQ at West Thebarton Rd., Thebarton (Ph. 008) 254 7442).

- G.P.O. Box N1002, Perth, 6061 VK7 - P.O. Box 1010, Launceston, 7250, VK8 - (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions - most week-day evenings about 09.30Z onwards around 3550 kHz. VK QSL BUREAUX

The following is the official list of VK QSL Sureaux, all are inwards and outwards unless

VK1 - QSL Officer, Q.P.O. Box 1173, Canberra. A.C.T. 2501. VK2 - QSL Bureau, C/- Hunter Branch, P.O.

Tersibs, N.S.W. 2284. WK3 - Inwards QSL Bureau, Mr. E. Trebilcock, 340

Gillies Street, Thombury, Vic. 3071. VKS — Outwards QSL Bureau, Mr. R. R. Prowas, 83 Brower Road, Bentleigh, Vic. 3204.

WK4 - OSL Officer, G.P.O. Box 638, Brisbane, Old., 4001

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VK7 - QSL Bureau, Q.P.O. Box 371D. Hobert. Tes. 7001 VKS - QSL Bureau, C/- VK8HA, P.O. Box 1418.

Darwin, N.T. 5794. VKS, 0 — Federal OSL Buresu, 23 Landale Street, Box Hill, Vic. 3128.

QSP -

THE ARNOLD REPORT

Well, here we are already three months into 1979, the year of the WARC. Of course matters concerning this most important conference are uppermost in our

minds at present. And while this is naturally understandable, we must not forget the institute and

its wellbeing. As you know, the prime object of the WIA is to look after the interests of its members. Australian Amateurs, it is funded by the members, and these members elect

and are able to consult with, their governing council and its executive. The annual meeting of the council, "The Federal Convention", is this year being held during April as provided for under the Constitution.

in 1976 Bob Arnold presented a report on the organisation of the WIA together with a number of suggestions." The Federal Council of the day, in deciding to retain the existing organisation.

however did accept many of the suggestions that did not involve organisational changes. Since the Initial introduction of the Arnold Report, there have been changes in the climate of amateur radio in several areas.

It would therefore be well to give this report further thought, bearing in mind that we should attempt to make the most efficient use of our resources, both personnel and funds.

With the Federal Convention coming up, it is for the members of the Divisions themselves to provide guidance for their Federal Councillor in order that the Council may as a whole, after due consideration, reach decisions that will best serve the Institute. I am looking forward to a Convention that will set the Institute well on the post-WARC

> D. A. WARDLAW VK3ADW Federal President.

* See AR for April 1976.

OSP

ULTIMATE DX

Remember the SETI article in AR for December 1978, page 557 Prof. Paul Horowitz WIHFA, writing in CQ for December 1978, describes a three month visit to the Arecibo entenna system in Puerto Rico. The dish is 1000 lest in diameter and it can sleer 20° from the zenith in any direction. It has a gain of 68 dB at 1420 MHz and has an on-line computer to calculate the correct fre-quency every 20 milliseconds and set the local oscillator accordingly. This degree of accuracy is required because the earth's rotation causes the received frequency to drift at 0.15 Hz/second. The rubidium referenced oscillators are stable enough to allow multi-channel spectral analysis with a resolution of 0.01 Hz at 1420 MHz, with a resolution of 0.01 Hz at 1420 MHz, Total bandwidth was 1 kHz resolved into bins of 0.015 Hz. The frequency most fevoured was close to the neutral etomic hydrogen "hyperline" spectral line at 1420-465751768 MHz. During three months in early 1978 Prof. Horowitz looked at all sun-like stars within 80 light years visible from the dish, a total of 185 sters. Sensitivity was 4 x 1027 walter meter? which, if used in another star system, our salaxy with an identical twin using 0.5 mW CW, would have been easily detected at 1000 light years distance. Even using a choice from the 100 separate stages of receiver modules linked to-gether as discrete "receiver units" produced no

PR IN EMERGENCIES

When a disaster or an emergency arises and a "net" is set up to handle traffic on the high frequencies, the word spreads quickly emong the hams that that particular frequency is busy handling a public service from Amateur Radio Rapidly the number of "Rateners" grows. As a well trained Amateur, no stations other than those involved with the emergency situation will interrupt the proceedings. But this does not mean that hundreds, or perhaps thousands, night not be evesdropping and discovering new areas that "they" can prepare themselves for in Amateur Radio work. And, just as our hams are listening, so is the SWL and "this" is the time we can do a job and promote public relations at the same time. Every operator working into that "Emergency Nat" is a PR representative for Amotour Radio.— From San Diego ARNS Bulletin August 1978.

road





to 70 -- Three 88740 2.4 KVA Hipersil Xfmr no tune up. And full OSK.



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Three 8874 Ainho 764 -Alpha 76CA -Three 2974 tubes Hingesil Year



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WIANEWS

John Payne VK3AED, Federal Councillor of the Victorian Division, accompanied by VK3 Council member Col Fisher VK3YII, attended the Executive meeting held on 25th January. Much of the time was devoted to discussions about the Channel 5A report submitted to Executive from the Victorian Division's special subcommittee.

It appears that lobbying in the political arena last year, coupled with other important factors relating to other frequency users of the Channel 5A spectrum allocation, has led to a reappraisal of the use of this non-standard channel

The Channel 5A report will now be considered by the VHFAC, under the chairmanship of Peter Wolfenden VK3ZPA, to determine how best to prepare a suitable presentation for the attention of the Minister.

50 cm BAND

During the same meeting the opportunity was taken to hold a considerable discussion on the temporary allocation of the 50 cm band to the amateur service. This is a unique allocation with no counterpart elsewhere, it was made a temporary substitute for 70 cm after WARC 59, when the 70 cm band could not be allocated for amateur use because it was being used in Australia for other purposes. The 70 cm band was an amateur international allocation elsewhere in the world at that stage and, of course, still is to a greater or lesser degree in different regions.

Since, however, Government has not published any plans relating to UHF television and since the amateur service is very keen to foster UHF television in Australia to remove pressures in the VHF region, little is likely to be achieved by any action at



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this time. It is considered most important to secure the best possible allocation relating to the 6 metre band and the earliest possible removal of the Channel 5A allocation. Those who have made a close study of frequency manage-

ment concepts will understand the enormous number of problems to be resolved, with or without the influence of WARC 79. 1979 CALL BOOK

DO WE HAVE YOUR ACCURATE INFORMATION FOR THE 1979 CALL BOOK?

Members can check the accuracy of the Call Book data by looking at their AR address labels. Any differences should be advised to Box 150, Toorak, as early as possible.

The real problem area is information about ficensed nonmembers. Monthly lists of new calls, changes of address and cancellations used to come from the P. & T. Department even though deleved and containing inaccuracies. Now, however, there have not been any since April last year which makes it very difficult to produce a comprehensive Call Book, if any member would care to assist by asking non-members to send in their details to Box 150. Toorek, this would be greatly appreciated, We have over 2000 non-members listed on the computer file but when the request for donations towards the costs of WARC 79 were mailed to them last October approximately 10 per cent were "returned to sender" by the Post Office as "left address". "unknown", etc.

WARC 79 APPEAL

Notwithstanding this setback, donations towards the expenses of WARC 79 have been coming in very satisfactorily. Over \$1500 has been donated in the last few months and a listing of donations from members will be published as soon as space in AR permits. MEETINGS

The Executive Meeting on 25th January also discussed the Ron Wilkinson Achievement Award, WICEN training exercise requirements, the appointment of Bill Verrall VK5WV as the new Federal Awards Manager, and thanks to Brian Austin VK5CA, presently hospitalised, for his work in this area. Ideas about the proper use of the \$3500 donations for Federal Education and a number of other items.

PROJECT ASERT

A meeting of Project Asert on 18th January reviewed the latest situation for a report in AR and proposed standards for receiving equipment.

THE RON WILKINSON ACHIEVEMENT AWARD FOR 1978

Details of this estimable annual Award were set out on page 17 of AR for March 1978. The Award is funded from Interest received from a most generous donation received from Mrs. Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC

For the year 1978 two names were considered by Executive and after considerable thought, both were recommended to receive the Award jointly.

The President of the Tasmanian Division, lan Nichols VK7ZZ, submitted and recommended the name of Winston Nichols VK7EM, of Penguin. His recommendation received the support of the Tasmanian Division Council.

VK7EM receives the Award for his outstanding work over many years for VHF and Amateur Television signals on 70 cm. He still holds a distance record for a successful two-way ATV contact on 70 cm with VK3 and hopes to extend this by contacting a VK5 as early as possible. The other recipient is well known to almost every Australian amateur for his persistent and continuous work over many years in the field of Intruder Watching. He is none other than Alf Chandler VK3LC All's devotion to his task, despite every concelvable difficulty, has ensured the continuance of this most important activity,

Without him there might have been no Intruder Watch service.

His overseas contacts and close Ilaison with IARUMS ensures that Australia is represented in the international area. He Is also the Intruder Watch Co-ordinator for IARU Region 3. If he could not obtain satisfaction through the local channels for reports, he certainly obtained several successes through the good offices of his friends abroad.

Congratulations to VK7EM and VK3LC for their well-deserved recognition.

OSP

144 MHz BAND TE OPENINGS

On 5th November last beacon station ZSSON on 144.13 MHz was received in Athens by SV1DH, a distance of Jenuary 1979 about 7100 km.-IARU R1 News

10m BAND INTERNATIONAL BEACONS

	is a fiel of 10m band	
SAHE	Station	Location
28,175	VESTEN	Ottawa
	Change to new frequency	y defayed.
28,205	DLOIGI	W. Germany
26.2075	N4RD	Flo., USA
28.210	3BBMS	Mauritius
28.2125	20931	Gough Is.
	Under constructi	pn.
28,215	GB3SX	Gowbaraugh
28.220	6B4CY	Limessol
28.2225	HG5AIR	Budapasi

Mt. Clinia, NZ

Bermuda

Sahrain

ZLZMHE VPORA 28,245 THE BADDAIN KINGS

alralobt

From Florida Skip (W4IYT), from the Phantom XYL. The wife of a Ham can never brag. About the bargains she does enag. While the wife of a man who, with his face

Con sav "I got everything for eight-ninety-eight". It seems his gear all comes from MARS, Or he salvaged it out of railroad cars

And he got some of it at a surplus sto Where he siways discovers bergains galore. (He gate it all in the 50c bin - and he

Filled his whole sack for less than a fin.)

At the CAREN club auctions he got parts for a He got tubes and transistors for a price that's

For two bucks he got 5,000 pounds of neat junk That all went with us in our automobile trunk

And I've not even touched on the trading he's done,

Many's the time he got three for one. And the treasures he's given that someone can't

Like the receiver he found that just needed a fuse.

And the Iclophone treasures that he holds so dear Were traded by friends who stopped by for a

No ham ever tells his wife or his hone That something he has actually costs money

I wonder who supports Heath and Crabine
The inescapable conclusion — it must be CB.
—From San Diego ARNS Bulletin August 1978.

WANTED

Qualified accountant with amateur call sign to advise the Federal body on financial matters in particular. Work load is barest minimum, no book-keeping. One meeting each month on the average and possibly only an hour or two extra to study accounts. Would suit any qualified volunteer in Melbourne area wishing to donate a few hours of his time to

Please ring Executive office 24 8652.

A SHORT COURSE IN PUBLIC RELATIONS

The 6 most important words: "I admit I made a mistake". The 5 most important words:

> "You did a good job". The 4 most important words:

"What is your opinion". The 3 most important words:

"If you please". The 2 most important words:

"Thank you".

The least important word:

·T".

SOLID STATE SWITCHES FOR VIDEO AND RF

For switching low level RF and video signale (in the order of 1V p-p), a fully electronic switch will do the job much faster and more reliably than a relay. The cost will be about the same or less than a medium quality standard relay, depending on the type choson. There are other cost-charmel installation, impedance charmel installation, impedance charmel scale of the computer of the control installation of the control installation of the control lines and also a few current control lines are control lines and also a few current control lines are set to the control lines and also a few current control lines are set to the control lines and also a few current control lines are set to the control lines are set t

The need to switch high frequency, low level signals at coaxial line impedance often arises, particularly when TV video signals are being handled. Whilst a commercial toggle switch will often suffice, it is not capable of being remotely actuated. Also, since these devices are not intended for switching RF, radiation and crosstalk problems (in a changeover application) may ensue. A standard relay will enable remote operation, but these two problems may still be present. The ideal answer is to use a good quality coaxial relay, but of course these devices are not cheap. If you have the need to switch high level RF signals, the coaxial relay is probably the best choice, especially if transmission line impedance discontinuities are to be avoided.

Two designs for solid state video switches are presented. The first (Type 1) employs a pair of 4016 CMOS quad bi-fateral switches, and the other (Type 2) uses all-discrete circuitry. The capabilities of both configurations are broadly similar, with the IC design having generally appear of the configuration are broadly similar, with the IC design having generally appeared to the configuration and appeared to the configuration and the configuration of the configuration

Both switches are intended to perform a changeover function for standard CCIR TV video waveforms, which have an amplitude of 1.0V p-p. The circuits are designed to drive 75 ohm coaxial cable, although they would drive 50 ohms lines with a small deterioration in signal handling capabilities and high frequency performance. The input and output lines of both switches are AC coupled, with the time constants being such that no frame tilt is detectable on a transmitted CCIR TV waveform. This good low frequency characteristic (together with the HF response figure) makes the switch circuits more than adequate for very high quality audio signals, if you have a requirement in this direction. If a low output impedance is not required, the emitter follower stage may be omitted in both designs. This will greatly reduce current consumption and also lower the total cost



Channel 1 selected

FIG. 1(b)
Channel 2 selected
The input impedance for each channel

of the Type 1 (IC) switch is about 900 chims, and about 900 the chims, of the Type 2 (discrete) switch. Depending on the circulty feeding the switches, it may be received by the control of the circulty feeding the switches, it may be received by the control of the circulty feeding the switches proceed the chimself of the control of the circulty of the control of the circulty of the control of the circulty of th

The outputs from the switches may be terminated or not, according to your requirements. Remember that coaxiel cable is a transmission line, and that long lengths should be terminated in their characteristic impedance, in order to prevent mis-matching and consequent reflections.

Both switches are designed to operate from a +12V supply rail, and consume between 25 and 45 mA of current, depending the they are used and also which change the properties of the properties o

Andrew Pierson 1 Bindana Ava., Sallabury Park 6109

CIRCUIT DESCRIPTION - TYPE 1
Heart of this switch is the 4016 integrated

circuit, which contains four separate CMOS bilateral switches. These may be considered as "electronic relays", but they have an "on" resistance of a few hundred ohms. Hence, if we are going to use them In a low impedance switching application, some form of current driver will be required after the switch. Also, If they are wired for a simple SPST function, the stray shunt capacity existing across each switch in its "off" state will give rise to crosstalk at high frequencies from the channel which is supposed to be switched off. This shortcoming is remedied by using six switches (three for each channel), wired in the configuration shown in Figs. 1(a) and 1(b).

in this manner, signal passed via the "carry-through" capacitance of the first series switch in each channel is shorted to ground when that channel is "off". The two series switches prevent the shunt switch from shorting either the input or the output lines.

DC operating bias for the output emitter follower is provided by a realistive divider nelwork at the input of each chance and a supplied from the land of each chance as applied from that network associated with whichever channel is selected. The AC input signals are capacitively coupled on to this fixed bias voltage, and trust the bias at the output of the switch, which is then applied to the base of an emitter follower.

The output line is capacitively coupled from the emitter of this stage. The bias level at this point is about +1,65V DC. which implies an output drive amplitude capability for a symmetrical signal of 3.30V p-p (unterminated) or 1.65V p-p (terminated in 75 ohms). Note that the broadband gain of the switch does not alter significantly when it is terminated; the drive capability drops to half its value. i.e. you can only apply a maximum of 1.65V p-p to the inputs. This is more than adequate for a standard CCIR TV signal (1V p-p). The 10k ohm resistor across the output line prevents the build-up of a DC potential due to the leakage resistance of the 1000 uF electrolytic coupling capacitor when the switch is running unterminated.

PERFORMANCE — TYPE 1 The broad-band insertion loss of this

switch is 0.36 dB (unterminated) and 0.73 dB (terminated — 75 chms). The response (referred to 1 MHz) at 30 MHz is —1.6 dB (unterminated) and —5.3 dB (terminated — 75 chms). The crosstalk (measured at 5 MHz) is better than 60 dB down, but note that these figures can be spoiled by poor circuit layout. These and other parameters

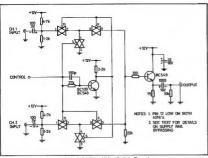


FIG. 2: Solid State Video Switch, Type 1

may be compared with those of the Type 2 switch in Table 1.

CIRCUIT DESCRIPTION - TYPE 2 This switch operates on an entirely differ-

ent principle to that employed in Type 1. Here, the configuration consists of two common-emitter amplifier stages sharing the same collector load resistor. Each stage is provided with operating bias upon which the signal to be switched is superimposed. Now, each emitter load is returned to earth via the collector-emitter junction of a switching transistor. The control signal is applied to the base of the switching transistor associated with channel 2, but the switching transistor for channel 1 is supplied with an inverted version of the control signal. Thus, only one channel can be activated at any particular time. Since the blas networks for each channel are identical, the DC conditions of the switch remain unchanged whilst the AC information changes over from channel 1 to channel 2 when the control line is taken to +12V.

Since a phase inversion is incurred in this switching process, a unity-gain inverting stage follows, in order to restore the correct signal phase. The final stage is an emitter follower which provides a low impedance drive to a coaxial line. The purpose of the 10k ohm load across the output has been described in connection with the Type 1 switch. The blas voltage at the emitter of the cable driver stage is typically 2.0V, which gives a maximum symmetrical signal drive capability of 4V p-p (output unterminated) or 2V p-p (output terminated - 75 ohms)

PERFORMANCE - TYPE 2 Note that in the common-collector pair the ratio of collector load to emitter load resistance is slightly greater than unity (1.19). This small gain figure conveniently makes up for other losses incurred in the circuit. As a result of this, the overall broad-band gain for the Type 2 switch is 0.67 dB (output line unterminated) and 0.18 dB (output line terminated - 75 ohms).

Since excess current gain is available, frequency compensation is employed in the phase inverting stage by means of Cc, which lifts the gain at high frequencies as its capacitance reactance falls. For normal video bandwidths (5-6 MHz) the inclusion of this component is unnecessary. However, if the optimum bandwidth is required, the value of Cc should be 47 pF if the output stage is to run unterminated. The -6 dB bandwidth under these conditions will be approximately 22 MHz. If the output is to be terminated in 75 ohms, Cc should be made 56 pF. Then the -6 dB bandwidth will be about 19 MHz. Note that the above compensation capacitor values are for optimum square wave response, i.e. the frequency vs. amplitude characteristic does not exhibit a positive slope at any point. The crosstalk figure (-32 dB at 5 MHz) is not as impressive as that for the Type 1 switch, but it is quite adequate for normal video

CONSTRUCTIONAL DETAILS -TYPES 1 AND 2

For the Type 1 circuit, PC card would prove the most suitable method of construction, due to the presence of two ICs. A piece of either DIL experimental card or VEROBOARD would be the most expedient. The Type 2 switch circuitry is more amenable to hard wiring techniques. but a specially laid out PC pattern with plenty of earth area would be the ideal method for both designs.

All resistors may be 1/4 watt 5% tolerance, and all electrolytics are "tag" tantalums, with the exception of the 1000 uF output coupling capacitors which are etched aluminium foil types. All the 150 pF "speed-up" capacitors may be ceramics, and the frequency compensation capacitor in the Type 2 switch may be a silvered mica or NPO ceramic type. The BC109 transistors have been used because of their high current gain, and substitutes with minimum current gains of less than 200 should not be used. Similarly, the 2N3638A in the Type 2 circuit has been chosen for its current gain, and should not be replaced with a 2N3638.

Although the dissipations of the output emitter followers are within the 300 mW fimit for the BC109 (228 mW and 287 mW for Types 1 and 2 respectively), BC549s have been specified for these positions as their higher dissipation rating (500 mW) should ensure better long-term reliability.

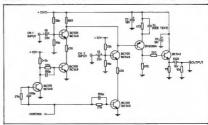


FIG. 3: Solid State Video Switch, Type 2

Even so, the output drivers run at a fairly high temperature, and arrangements for adequate convection cooling should be

mans connection with bypassing, it should be noted that the supply rails to both 4018 in the 118 to both 4018 in the 118 to both 4018 in the 119 at 118 to both 4018 in the 119 at 118 to 118 t

If you intend to put either of these awitches to use in applications where their extended low frequency response is not

DADAMETER

possible.

required (e.g. for switching over a pair of HF VFOs), it would be prudent to replace the input and output electrolytic coupling capacitors with smaller value coramics. As well as saying both space and money, you will circumvent any possible problems which may arise at HF due to inductive effects within the output coupling capacities.

On a final nota, it may have occurred to some readers that one of the unused to some readers that one of the unused 4016 sections in the Type 1 switch could have been used as the control line inverter. The reason why 1 did not do this is that I praferred to keep the control and switching functions apart as far as possible, in order to avoid interaction effects when the circuit is handling signals near its upper frequency limit. Le. about

30 MHz. However, if you would like to try this method, it is performed in the following manner. Ground the output of the 4016 section, and connect the input to the

section, and connect the input to the +12V rail via a 2.2k ohm resistor. Connect the control pin for this section to the master control line, and then an inverted version of the control signal will appear at the input. The low point of this swing will be higher than that from the BC109 inverter stage due to the "on" resistance of the 4016, but it will adequately switch the other 4016 sections. Under these conditions, the master control line resistance will be very high (all CMOS), which may prove advantageous to you. Also, the current drawn from the +12V rall will remain at 25 mA irrespective of the channel selected.

PAR	AMETER	TYPE 1	TYPE 2	UNITS
SUPPLY VOLTAGE		+12	+12	V
SUPPLY CURRENT	Channel 1 selected Channel 2 selected	25 30	40 45	mA
CONTROL LINE LOGIC LEVELS	To select channel 1 To select channel 2	Between 0 and +0.5 Between +11.0 and +12.0	Between 0 and +0.5 Between +11.0 and +12.0	V
CONTROL LINE CURRENT 0V (channel 1 selected) +12V (channel 2 selected)		0 420	0 840	uA
INPUT IMPEDANCE	Channel 1 Channel 2	0.87 (min.) 0.87 (min.)	9.3 (min.) 9.3 (min.)	k ohm
OUTPUT	IMPEDANCE	To drive 75 ohm or 50 ohm (see text)	To drive 75 ohm or 50 ohm (see text)	ohm
MAXIMUM OUTPUT VOLTAGE SWING (for a symmetrical input waveform)	Output unterminated Output terminated — 75 ohm	3.30 1.65	4.0	V p-p
BROAD-BAND INSERTION LOSS OR GAIN (measured at 1 MHz)	Output unterminated Output terminated — 75 ohm	-0.73 -0.73	+0.67 +0.18	dB
HF RESPONSE (relative to 1 MHz)	Output unterminated Output terminated — 75 ohm	—1.6 dB at 30 MHz —5.3 dB at 30 MHz	6 dB at 22.4 MHz (Cc = 47 pF) 6 dB at 19.25 MHz (Cc = 56 pF)	db - MHz
CONDITIONS: (1) Measured at 5 MHz. (2) 1V p-p input to Ch. 1. (3) Ch. 2 input shorted.	(4) Ch. 2 selected. (5) Output terminated. (6) Output measured with respect to Ch. 1 input.	-60	32	dB
	OUTPUT OFFSET VOLTAGE ed at 100 kHz}	50 (typ.)	100 (typ.)	mV
CONDITIONS: (1) Measured at 100 kHz. (2) Control voltage swing 0V-10V.	(3) Result is time taken for a 10%-30% change in offset voltage.	0.5	2.0	us

A LINEAR AMPLIFIER FOR THE IC202 AND

THE IC502

Gil Sones VK3AUI 30 Moore St., Box Hill South, 3128

The IC292 and the IC592 are great portable rigs and quite adequate for local contacts from the home QTH — they do however lack power for DX openings or pile-ups. The amplifier described uses the ubiquitous QGE96/40 to give that extra bit of "ownph".

The OGE06/40 is a rugged valve which was used for many years in commercial YHF base stations. It was also a favourile final in AM rigs used by VHF amsieurs. Many readers will, like the author, have at least one somewhere in the shack gathering dust.

The circuit is shown in Fig. 1. It is a conventional simplifier with fixed besides abailitied by sener clocker. The correct has been considered by sener clocker. The correct has been considered by the convention of the conventio

Coil data is given for both bands but you should check the circuits, with the valve inserted, by means of a GDO to see that resonance occurs. Circuit layout can cause minor variations. The 2 metre grid coil is self resonant with the QQE06/40°s input capacitance.

Parasitic chokes were found to be necessary on 6 metres. The grid swamping resistor was found to be useful in stabilising the load on the driver and for sopping up some excess drive.

The amplifier must be built with absolutely minimum length leads to maintain stability. The cathode bypass is made by puralleling several disc ceramics to obtain a low impedance bypass. The tube should be mounted so that the metal disc inside the valve is level with the chassis. This is a requirement for tube shielding and self neutralising.

Fig. 2 shows the circuit for the relay driver. Alternative interfacing methods are shown in Figs. 3 and 4. The IC202 and IC502 provide a DC outTOWNSOCIONES A MOD D AND CONTROL TO THE CONTROL TO

FIGURE 1: Linear Amplifier for 6 and 2 metres

COIL	DATA	
	2 Metres	6 Motres
L1	1 Turn 160	2 Turns 16G
L2	4 Turns 16G	8 Terms CT 160
	16 com Dia.	22 mm Die.
LS	4 Tures 10G CT	10 Turns CT 10G
	18 mm Dig.	25 mm Dla.
LA	1 Tum 19G	1 7um 16G
TUNE	NG CAPACITORS	
C1	25 pF	50 pF
CZ	Not required	15+15 pF
C3	8+8 pF	15+15 pF
Cal	38 pF	100 pF

put voltage on the coaxial output con-Page 10 Amateur Radio March 1979

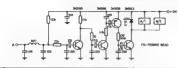


FIG. 2: PTT Relay Driver to said ICS02 or IC282

nector's inner conductor during the receive condition and zero on transmit." This is part of the send-receive diode antenne switching control system. This voltage is used in the scheme shown in Fig. 4 to control the Innear amplifier via the relay driver shown in Fig. 2.

An alternative is to connect the micro-

An alternative is to connect the microphone to the IC202 (or IC502) via the amp! fler and so access the PTT line. This is a simple scheme but to avoid upsetting the PTT circuitry in the transceiver the same refay driver should be used. See Figs. 2 and 3.

The author used coaxial relays for antenna change-over but any low RF loss switching relay can be used. Remember, especially on two metres, to take care here as losses will reduce receiver sensitivity you can't work the DX if you can't hear if

On two metres a low noise preamplifier is a worthwhile inclusion as the IC220 noise figure whilst adequate is not the lowest available if a preamplifier is used "bareloot" operation becomes inconvenient without more switching. On six metres the IC320 would suffer severe cross-modulation in channel 0 areas if a receive preamplifier were used.

The prototypes of both amplifiers were both using primited circuit lammate soldered together to form a combined box and chasals. This is an easy method of construction and provides readily solderable aren't planes. Earth leads can be kept very short and shielding is easy, supportail used was the cheep surplus "moutied must" variety as the dielectric properties are uninportant.



FIGURE 3. Using the PTT Line Actuation

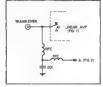


FIGURE 4 Using the Coaxial Line Actuation

*The IC502 requires a modification to short out a DC blocking capacitor in series with the antenna connector — Tech. Ed.).

FOX HUNTING -

MANUAL GAIN CONTROL FOR THE IC202

Gil Sones VK3AUI 30 Moore St. Box H II South 3428

Foxhunts require a menual gain control to reduce receiver sensitivity as the hidden transmitter is approached. The IC202 is a very compact rig and can, if necessary, be carried overland (or water if on some foxhunis . . . Ed.).

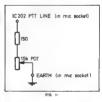
Tha very compactness makes the provision of a manua gain control a problem. Many owners are not prepared to drill holes in the case anyway. Salvation is at hand because the PTT line, averable at the microphone socket, is connected to the control transistors supplying the major and stages of the receiver AB that is raquired is a potentiometer connected between the PTT line and ground.

The manual gain control may be mounted as a plug-in module or built into the microphone case

The circuit is shown in Fig. 1. The nominal 150 ohm resistor R1 should be



adjusted so as to make the minimum gain esting just above the point where the licitize setting just above the point where the IC2002 PTT is activated (150-200 ohms). The licitize setting the licitization setting the lic



Photos of Manual Gain Control



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SOME INFORMATION ON THE MODEL 15 TELETYPE G. F. Hughes Vick

G. F. Hughes VK2ZNY P.O Box 37, Ryde, 2112

In the short period that has elapsed alnce RTTY groups have been established, the availability of machines has been on the increase, particularly in two major brands. This article deals with one of them.

The Model 15 Teletype (and its various offshoots equipped with paper punchers and readers) is an old and reliable model. Although it suffers from antiquity, it is nonetheless a very easy machine to set up.

nonetheless a very easy machine to set up. In the following paragraphs are some bits and pleces which the author hopes will help those who have recently acquired one of these machines.

CIRCUITS

These are divided into three groups: the baseplate which is primarily the motor and its speed regulator, the transmitter, and the typehead (receiver). If your machine is intact, your circuits will be as shown in the diagrams. It must be noted, however, that some Model 15 machines could be ex-PMG, and certain facilities not required by the Department may be omitted.

The motor speed regulator is a centrifugal type fitted at the rear end of the motor in a drum. Contacts and RF chokes are included in this unit. A rear plate carries a double brush contact arrangement to carry power to this section. Speed is checked by observing strobe marks painted on the periphery of the rotating member. The use of ordinary 50 Hz lighting for this Is not strictly speaking, applicable as the shaft revolves at 2308.5 r.p.m for 50 Baud rate, or 2098,5 r.p.m. for 45,45. If one is prepared to paint 3 equally spaced marks around the drum periphery, the motor speed will have a 3.4 per cent error at 45.45 Bauds using a 50 Hz lamp (for a stationary pattern, exactly 48,995 Bauds is

the setting) The transmitter consists of a cam unit operating 6 sets of parallel connected contacts, and is provided with the necessary network for operating on DC lines. For AFSK, this network may cause problems and should be disconnected if operation directly from these contacts is anticipated. A contact "debouncing" circuit should also be considered. When series connecting the transmitter and typehead to produce local copy this network may be needed. It is a good idea to run the transmitter contacts into the AFSK modulator, and obtain local copy by demodulation, in this way a constant check on the MODEM (modulatordemodulator) system can be had while

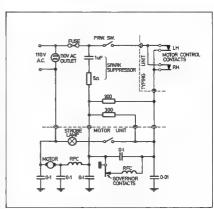


FIG. 1: Model 15 Teletype System

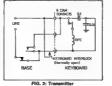




FIG. 3: Receiver

Amateur Radio March 1979 Page 15

transmitting or nunching a tane while playing a tape or receiving, the demodulator only is used.

The typehead consists of a pair of coils whose total resistance is about 210 ohms. and requires 60 mA for proper operation. When connected as the receiver on a long telegraph line, it is usually preceded by a correction network to correct for line waveform distortion of the Ideal square form. For amateur use, the coils are driven directly. Low impedance drive tends to be rather sluggish when operating in the constant voltage modes.

Idea!ly the typehead magnet should be driven from a high voltage source via a high resistance. At the lowest possible voltage, the time constant will be L/R. where R = 210 ohms, and L is the coll Inductance (a constant). If the supply voltage is, say, 150 volts (current 60 mA). the series resistance would be 2500 ohms. When substituted into the above formula. it is easy to see that the apparent magnet speed will be about 12 times faster. Wa can also make the release time just as fast by quenching the back EMF via the same resistor through a catching diode across this series combination - not just across the coll. This would be required to protect a keyer transistor from reverse Vce breakdown in any case Dissipation of the resistor is about 9 watts, and can be handled either by a single 10 watt unit or ten 250 ohm 1 or 2 watt units in series POWER SUPPLY

As the motor of the machine operates from 110V AC, a suitable stepdown transformer must be used. This can, with a bridge rectifier and capacitor of 100 uF or so also provide 150V DC nominal voltage for the typehead magnet/resistor circuit by grounding one side. Although it leaves the motor circuit "up in the air" when connected to the same transformer secondary. there shouldn't be too many problems of hash experienced with suitably fillering around the motor governor circuit. The author used an old TV power transformer normally used in a voltage doubling HT supply, furnishing 105V RMS and 6.3V heater. Under load, the motor was quite happy with the slight voltage difference The heater winding was operated with a voltage doubler and gave sufficient input to drive a 12V three terminal regulator to supply the Modem

SOME THINGS TO TRY

Remembering Department "mods", certain facilities may or may not be included on your machine. Motor Stop: If the letter "H" or "J" in

the FIGS selection immediately follows the blank (without space), the motor will stop. The typehead magnet must be deenergised to allow various levers to close the series motor control contacts to start the motor. The contacts are located on the lower front portion of the typehead basket assembly. If you want to disable this section, go to It!

Signal Bell: It is wise to retain this facility, as it can be used at the commencement of a transmission. It is deslonated on the typing keys in FIGS as a bell symbol or the letters "BL". In telegraph hookup, it is used to set other teleprinters into operation that may be in standby mode, and to wake up the aleeping operators (as if they couldn't hear a Model 15 making its noisel). It is also handy to make sure that the machine is operating properly, thereby eliminating the risk of printing garble.

Keyboard Lockout: If two blank signals are received consecutively without any other character or specing breaking the sequence, a handle marked "SEND-RECEIVE" will move to receive position This closes a pair of contacts which short out the keyboard transmitter bank. The handle must be manually moved to SEND to transmit from the keyboard

KO SUKTOWER

To optimise the machine for receiving, it is important that the decoding cam in the typing system is in step with the trens mitter of a second machine. The letters "RY" are used in continuous fash on while adjusting a guadrant lever at the LH side of the machine. Unlock and move this lever while noting the scale posit on where the machine prints parble. Move the other way for the same effect and set moway between the two This assumes that the motor speed is set to amateur Baud rate of 45.45

The motor speed is set by ad usting the spring tension pulling against a centrifuga weight fixed to a pair of contacts naide the drum fitted to the rear shaft section of the motor. Two levers skim a rubber tyred wheel fitted to an adjustment screw in the drum, and either increases or decreases tension appropriate v. With a Little Inspection, these levers are easy to find. One Is situated between the drum and the rear cover of the motor on ton of the bearing while the other a fixed to a large spring at the back. This system may appear archaic, but It is the basis of the XYL's Sunbeam M xmaster food m xer, or the motor governor in the majority of cheap type (and some exotic) cassette recorders

There may be other characteristics not listed here, and the author applopises for any missed. How about sending in your pet RTTY almmick for all to share?

73s. Goodnight.

COMMERCIAL KINKS

RON FISHER

VK3OM

This month we return to the Yaesu FRG-7 receiver Arthur Solomon VK3LJ has come un with some simple tricks which no doubt increase the pleasure of using this fine rece,ve.

Over to Arthur

"Recently I purchased an FRG7 and am delighted in general with it. After experiencing the many shortcomings of other receivers in the moderate price range, I consider the acquisition of the FRG7 a definite step forward

Nevertheless, I do have some criticisms (rather obvious ones, perhaps) and some s.mple modifications which may be of interest to you and to your readers in AR. I offer them for what they may be worth.



(1) I wired in a miniature 12 volt lamp for the S meter as suggested in June AR but with a slight alteration. The miniature lamp I bought was supplied with a rubber grommet, which I trimmed as Indicated in Figure 1. I cemented the grommet, rather than the lamp itself, above the S meter, and then pushed the lamp through the grommet. This makes replacement of the lamp a very simple matter. (The leads to the lamp are taken, as you suggested, to the three lug strip above the chassis to the rear of the main dial.)

(2) An annoying feature of the FRG7 is the dial set knob which protrudes barely a millimetre or two through the front panel. Now, it is obvious that continual use of this knob is certain to cause wear of the panel surface at this point, not to ment on disfigurement, if not obliteration, of the lettering above it. A simple solution is to take a black plastic LED socket, file ts interior to fit the metal knob of the dial set, and cement it in place. It offers a firm purchase for the fingers, is not optrusive and blends perfectly with the design of the front panel (Figure 2).



FIGURE 2

(3) Another criticism of the FRG7 concerns the main dial itself. The cursor is set forward at least one cm from the d.al itself

and this introduces a serious para lax error A simple solution would be to fit a highly polished thin metal band just above the dial markings. There are many ways,

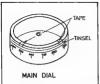


FIGURE 3

of course, of providing such a mirror backing, but after trying several, I settled for what I think is a very simple method. I bought a packet of "silver" tinsel, the kind that a used in Christmas decorations. The tinsel is only about 2 to 3 mm wide and is highly reflective. The tinsel is wound aroung the main dial drum at a height of about 1 mm above the figures on the dial and a secured at strategic points with transparent celulose tape. Its use is s mp.e: the crystal calibrator is switched on and the receiver is tuned for maximum S meter reading (on AM) or zero beat (on SSB) and the dial set adjusted until the cursor is lined up with its image in the tineal

This procedure of superimposing the cursor on its image is repeated when setting or reading frequencies on the dial.

The mirror scale harmonizes well with the general appearance of the receiver and the modification itself can be removed in seconds without leaving a mark.

(4) A deficiency in the FRG7 is the absence of an Inbuilt crystal calibrator. Such a facility is essential in any serious commun cation receiver and can be provided for the FRG7 by means of a quite simple modification - provided one is willing to relinquish the rather doubtful advantage of being able to operate the FRG7 from dry cells! (This is to me a rather pointless fac.l.ty: most amateurs or SWLs wishing to operate this receiver portable would sure y have access to either the mains or to a car battery). The LIGHT switch on the front panel is only a necessity if you wish to operate the FRG7 from dry cells, and if you are willing to forgo that facility, then you can use the LIGHT switch to operate an inbuilt crystal caubrator

The modification is as follows

(i) Remove the two wires from the LIGHT switch, solder them together and tape the join, The LIGHT switch is now available for the calibrator.

(ii) Remove the plastic dry-cell compartment on the sliding carriage at the rear of the receiver, first unsoldering the red and back eads from the white socket on the back panel of the carriage Mount your calibrator circuit board and crystal on the sliding carriage as shown in Figure 4. The

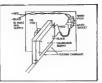


FIGURE 4

red and black leads from the white socket are connected to the board as shown

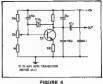
(iii) Trace the red and black leads from the white plug to their termination on the lug strip near the DC input tack under the chassis and disconnect them These leads and their plugs are now available to supply voltage to the calibrator (Figure 5)



(iv) Supply voltage for the calibrator can be taken from the 10V terminal on the three lug strip to the rear of the main dial. This is the same source that was used for the 12V miniature lamp used to illuminate the S meter. Wire a 100 mFd 25V electrolytic across this point, otherwise you will hear a guite impressive hum on the callbrator signal. Also add the circuit shown In diagram 4 in order to transform the 10V source into a 9V regulated supply. (You could simply use the 9V regulated supply of the FRG7 Itself but I found that with this arrangement, the incoming signal tended to drop whenever the calibrator was switched on.) The LIGHT switch should be connected as shown.

The modification is now complete and provides the FRG7 with a crystal calibrator controlled from the front panel. This simple modification does not deface the receiver in any way, does not deprive the operator of any essential facility and, in the event of subsequent disposal of the FRG7. restoration to the receiver's original state can be accomplished in but a few minutes.

A 100 kHz crystal would be the ideal choice for the callbrator but even a 500 kHz or 1 MHz crystal would be adequate. I use a 500 kHz crystal taken from a defunct No. 10 Crystal Calibrator. This is a rather sluggish crystal and therefore I used the circuit shown in Figure 6. This was designed by G30GK and published in the RSGB "Amateur Radio Techniques (1972 ed.). This little unit draws 1.5 mA



and provides a better than S9 calibrator signal over the entire range of the receiver The output of the calibrator was taken

by the most direct route to the SW antenna terminal (5) My last point consists simply of two

comments: (a) The Record socket on the front panel

has an additional use easily overlooked: it is not only an output socket but also an input one. You cannot only record from the FRG7 through this jack, you can a so play back through it and make use of the audio stage of this receiver. (b) The FRG7 as supp. ed to me was far

too generous in its S meter readings. The S meter sensitivity, of course, can be adjusted by means of VR401 on PB 528. Since one of the many purposes for which I use the FRG7 is to monitor the amateur bands. I considered that it would be a considerable advantage if its readings could be made to correspond with those given by my FT101E. Thus I simply tuned the FRG7 and the FT101 to a strong signa on the 20m band and adjusted VR401 until the two S metres agreed. Strange v enough, this correspondence holds closely across all the amateur bands, (Inc.dentally, since the inclusion of the crystal calibrator. I can locate a signal on the FT101 within 2 to 3 kHz of that Indicated on the FRG7 1"

Next month, a few interesting modifica-Nons to the Realistic DX 160 receiver.

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WARC 79 WARC 78 WARC 79 Amateur Radio March 1979 Page 17

CQ OUTER SPACE

Perhaps one of the most fascinating aspects of radio is the eternal question, "Is anyone else out there?" Out there meaning the vast, limitless depths of interstellar space.

From time to time there appears short and frustrating byfines in the world's press that such and such a group of scientists in so and so a country has definite proof of the reception of intelligent radio signals from the cosmos. Like quickelairve these startiling amountements sudpants from and disappear, never to be heard of again. Russia and the United States are the chief source of these singleine reventions and it is nited States are the chief source of these singleine reventions and it is nited States are the chief source of these singleine reventions and it is nited States that the common scient of secret military classification effectively siltences suther references to them.

OPTICAL LIMITS

Optical astronomy has almost reached its workets limits unless an observatory can be arrected on the moon, free of the discretified effects of the earth's amosphere. The complete of the earth's amosphere were completed it would only increase were completed it would only increase were completed in the control of the mail of the control of the control

The search for extraterrestial life began as far back as 1892 when Nikola Tesla and Gugliemo Marconi both began to speculate on strange morse signals they received on their primitive wireless apparatus. Again in 1920 Marconi heard unidentified signals when he was engaged In reception experiments and these aroused so much interest in scientific circles in the US that on August 21st, 1924, all American commercial stations, including the high powered Navy transmitters, were silent for a period of five minutes each hour for eight hours. It was hoped this slient period would enable various I stenling posts to pinpoint the strance signals. The results were inconclusive owing to the very broad spark signals emitted by European transmitters who were not signatories to the American silence period

MH KY WAY

It was not until 1939 that Grote Reber, an amateur located in Chicago, built to his own design a 10 metre metal dish and found that the entire milky way was a source of natural radio noise with several areas of very intense emission.

After World War 2 the search was taken up by Coccoin and Morrison of Cornell University who together wrote many papers on the subject, but were hampered by lack of search gear. They tried to involve radio telescope in their enthussatio plan, but in true British tradition he dismissed be idea as "invivolous" he was later to accept the challenge in principle, but was not prepared to diwert the Jodest Bank radio telescope from its planned survey of search of the production of the planned survey of search of the planned survey of search to understand to understand the planned survey of the s

In recent years there have been worthwhile attempts with radio astronomy to delve into the questions of life on other planets. Project Ozma undertaken by the United States was the biggest attempt of this nature and took place at Green Bank. West Virginia. Again several conflicting statements were issued at the conclusion of the tests, rather of a negative nature. The object of these activities is not an attempt to communicate with other worlds but to listen to intelligent radio signals that may emanate from some far distant planet, It may be worthwhile at this stage to make clear two opposing views on the use of radio astronomy. The more staid, conservative school uses radio telescopes to listen to the natural radio noise that emanates from far distant galaxies. In this way deductions can be made to determine the nature of the awesome proceses at work on newly formed or exploding nebulae and stars. Jupiter, in our solar system. is an excellent source of radio noise. The other school of radio astronomy is the one that concerns us. It is the use of radio telecopes to listen for intelligent transmissions in space. The equipment used in both cases is identical and comprises a large metal dish mounted on adjustable bearings that can be tracked to any point in the sky,

RADAR ECHOES

The giant telescopes of the world, such as Jodreff Bank and a newly completed one of immense size in the United States. are used almost exclusively by the first school, the stald conservatives. These Installations are used to probe stars and constellations far out in space. By listening on various wave-engths (hydrogen gas has a frequency of 21 centimetres) innumerable deductions can be made regarding temperature, composition of atmosphere, etc. Even radar plays a part in these researches, but only with limited distances. For instance Venus is never seen, only the thick atmospheric cloud cover is visible, effectively hiding the surface of the p-anet. By means of radar this cover was penetrated enabling the planet's rotation period to be calculated together with its surface topography. This was accomp shed in March 1961 using a wavelength of 2,388 mcs and a power of 12 600 watts and took place at the Deep Space Instrumentation Facility in America, the echo from Venus taking 8.5 minutes to return to earth. A further triumph was the first radar echo from the sun and later from Mercury. It was a scientist named van de Hulst who made the discovery that clouds of hydrogen gas emitted radio signals at 21 centimetres. It was the use of this wavelength that enabled scientists to map out the spiral arms of our galaxy which were invisible to conventional telescopes because of the massive dust clouds that intervened.

Returning to the subject of possible life on other words, it can be safely predicted that our own soler system is devoid of intelligent life capable of communicating with us. Our search must therefore expand to other constellations, the most suitable being Tau Cett and Epsion Erdent which slight or might not have planets capable of supporting life as we know it.

The size and nature of their suns is used as a guide or practisk to ascertain very roughly the conditions that might exist on other planets. As both these consistiations are 11 light years away from us and as radio agrafat savel at 30,000 km per second, it would take providing we had established their was a civilization afte to established their was a civilization after the second of their secon

Another possible obstacle to our search s the stage of development reached by any alien civilization. Assuming there is an inhabited planet in a certain constellation with similar conditions to our own earth, for us to listen to their radio signals and later to communicate with them, they must be at a stage of development similar to us. If they were a thousand years ahead of us in development, it can safely be assumed that they would use some form of communication such as superior mental telepathy ESP or perhaps a very advanced form of scientific visual communication, A thousand years behind us would mean they had just come out from the bow and arrow stage. Two or three hundred years would be nearer the mark, even then the balance would be critical Consider our own scientific advances during the past one hundred years as a guide

Another point worth considering is that assuring they were capable of monitoring our own radio spectrum and eavesdropping on our broadcasts from around the world, one can visualize their council of elders declaring "Leave well alone!" Going on our past and present record of international strife and blokening, could you blame them? Planet earth is not exactly an attractive proposition!

We now come to the last and, possibly, the most important aspect in our quest for ife out there. It is the vast, incomprehensible distances involved in which time plays a decisive part. When one looks up at the stars at night, one is actually looking at the past. The light seen actually left many of those stars and constellations tens, hundreds and thousands of years ago and in fact, many of those stars no longer exist. The incredible distances involved are difficult to grasp mentally. For example, the nearest star to us called Alpha Gentaur and Proxima Centauri (it is in fact a double start whose light takes four and a half years to reach the earth, is a mere stone's throw away in astronomical distances. For comparison assume the aun is one metre away from us. Then this nearest star. Proxima Centauri, is 200 km away from us! The same applies to radio signals which also travel at the speed of aght. If we did happen to hear an inte igent series of radio messages, the chances are that the transmission originated on a planet a hundred or so light years away It is possible that its parent sun had exploded and become a supernoval during the time the signal took to reach us. That particular crivilization could have equally well died out or decimated itself with an atomic holocaust during this period of time. In plain language we could be Instering to something that did not any longer exist

The prospect is not exactly encouraging. The best we can possibly accomplish at our present stage of scientific development is to listen and keep in listening. If we can prove beyond reasonable doubt that we have overhead and decoded an intelligent of the stage of

The Russians are far shead in this search. In 1973 the Soviet newspaper. "Tass", announced that the director of the Gorki Radio Research Institute had received signals of an unusual nature and did not resemble in any way the natural radio emissions from far distant galaxies Other USSR scientists, among them Dr. Kardashev and Professor E. Troltsky, are proneering the search for intelligent transmissions. They too have received signals which they describe as being of regular character and in groups lasting from two to ten minutes in duration, in 1975 the Ural Research station also claimed to have received transmissions which are not natural but artificial in origin and sent by sophisticated radio equipment. It is high in these Ural mountains that the Russians are or have constructed a giant radio telescope about twice the size of the installation at Jodrell Bank. It is indeed a great pily that news and information of this kind cannot be pooled and shared among the scientific circles of the world. The United States are just as guilty in suppressing vital news of this nature and the press often omit news items dealing with the subject as of being of no consequence, Again the ugly word "military and secret classification" keeps a lot of information locked away. The lack of any information on UFOs is another case in point.

Another fascinating radio sideshow has been the perplexing echoes received from our own regular radio transmissions. These were first noticed during 1927 in Holland A replica echo from a test broadcast which took from three to twenty seconds was noticed at irregular intervals over a period of several years. The normal rebound of a signal from the ionosphere takes about a fraction of a second depending on the wavelength used. What reflected these odd echoes? The Dutch transmissions were broadcast on 150 and, subsequently, on 31 metres and the echo times were identical How did the signals penetrate the ionosphere and more strangely still, how did they return again through the reflective layers? This phenomenon has been observed at odd intervals through the years, the last reports being in 1963 from Germany and Austria.

Even VHF and UHF have their quota of mysteries as illustrated by the following occurrence. During 1953 some UK television viewers were startled to see on their screens the identification card of TV station KLEE during a BBC church service The image was strong enough to override the normal picture and remained visible long enough to be photographed by several people. The BBC engineers dismissed the whole episode as freak long distance pick-up from the United States until someone did their homework and discovered TV station KLEE went off the air permanently in 1950 and in fact the station had been dismantled when it was bought out by a rival network

"Pirates" screamed the engineers when they learnt of this new development, until someone came up with some very disturbing facts. If indeed it was a pirate station how was it viewed in various areas from one end of England to the other? TV signal propagation is limited to roughly a line of sight so how was this widespread coverage accomp, shed? It would require at least fifteen very powerful stations to cover the areas Involved. The image asted just over four minutes and was never repeated in spite of careful mon toring by the engineers, so the idea of pirates can be dismissed without further thought. What caused this odd occurrence? One of the photographs of the card as it appeared was sent to the Federal Communications Commission in America who handle the licencing of TV stations and it was compared to the original from defunct station KLEE. It was identical in every respect, even to a slight blemish in one corner!

How was this picture received on British television screens three years after the fast transmission from Texas? Why was this particular low powered TV station chosen? Why was it only received in certain areas in England where a different type of transmission is used? Why was to seen only once and never again?

In conclusion, let me quote the chief

engineer of the BBC when asked for his explanation of the mystery "We are confronted with circumstances which are at variance with all accepted facts of television transmission. It is unthinkable that these signals could have been circling the earth for the period since that station last transmitted them. It is physically impossible that they could have been reflected by any celestial body in space at such a vast distance and received with such power. Power far beyond the limits of the original station. This leaves us with one remaining possibility, however bizarre, that this television signal was transmitted to us with intelligence and with a purpose, from a source and with an object presently unknown."

From Radio ZS November 1977

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Page 22 Amateur Radio March 1979

THE MAN BEHIND THE MICROPHONE

David Thompson VK2BDT. President of the Goulburn Amateur Radio Club. David's QTH is just outside Goulburn. His tower was originally used at the old Goulburn Fire Station

Photos courtesy of the Goulburn Evening





WIA QSL BUREAU INFORMATION FOR NEWCOMERS — AND OTHERS!

Fred Lubach VK4RF Qld. Der Outwards QSL Officer for past 8 years

To take full advantage of QSL bureaux certain rules should be phserved. Some States have both an Inwards QSL Officer, and an Outwards QSL Officer, as in Queensland. The Inwards section handles Incoming cards from both interstate. and oversess, and these are sorted, and eventually handed out to members at WIA meetings, etc., or, in the case of Country Members, posted by ordinary parcel post. Country members should insure that they have stemps, or stamped addressed envelopes lodged with the QSL Bureau to cover cost of postage.

QSL cards are proof of contact and should contain all relevant information, such as Date, Time, Band, Mode, Signal strength, etc., and all times quoted should be in GMT (UTC) and the month written In words. This is because in USA 2-8-78 means 6th February 1978! Preferably cards should be small enough to fit an ordinary letter-size envelope, and on thin card-

The call sign of station worked should be CLEARLY printed after the words "To Radio, . . ". Some newcomers are writing Christian names in this space, causing QSL officers to tear their hair out! Always pre-sort cards alphabetically, according to country prefix, with the exception of Australia and USA, when they should be sorted numerically according to States Note: USA has eleven OSL bureaux

If the station worked has a OSL manager handling his cards, please write his call in a prominent position, preferably in a different colour Remember, your cards are handled by several persons en route. Postal author ties allow us to send cards in bulk at a special rate, but require that no more than five words be used in the remarks section

Remember, bundles of cards that have not been pre-sorted, or are back-to-front, or upside down, are NOT appreciated by your voluntary QSL Officer who usually sorts thousands of cards at a time In VK4 each outgoing QSL card must bear a 1 cent QSL sticker, available from the WIA (O'ld. Division) Secretary.

THE RED CROSS MURRAY RIVER **CANOE MARATHON**

(IMPRESSIONS OF A VK5)

On Boxing Day 1978, having installed both the VHF (Kyokuto) and HF (TS520) in the car, I headed north-east from Adelaide, making for Kerang in northern Victoria, via Blanchetown, Renmark, Mildura and Swan Hul. Conditions for 20 metre mobile were excellent with short skip to VK2 and 3 and good contacts with friends in VK6. This allowed me to while away the driving time meanwhile, including contacts through both the Mildura and Swan Hill repeaters whilst in the r service areas, with a promise to call in and see Ray 3BRB and Joan 3BJB to share a cuppa on the way back A good test of the 60 watt 2 metre amplifier was provided by working Alex VK5CCT cross-band 2 metres/80 metres when approaching Kerang. Upon arrival at Kerang I found that Alex had everything well organised with four wheel drive Land Cruiser and trailer packed with absolutely a. necessities, plus luxury such as 12V/ 240V car refrigerator to keep the important items cold. A guick transfer of my radio equipment (as back-up gear) and other personal necessities (spare pair of socks) to the Land Cruiser, a short visit to Aiex father's home for refreshments and then we were away, headed further east to Yarrawonga and the starting place for the marathon cance race.

This race, which is the longest cance race in the world over 403 km (about 250 miles), has been run for the last nine years in ald of the Red Cross Society. Each year the VK3 Wireless Institute Civil Emergency Network provide communications support for this event, and it was for this reason I had travelled the 910 km (approximate.y) to both observe, learn and ass at where possible in this operation. Arriving at the starting point where all the officials canoelsts, support groups and about 30 amateurs were camped on a local sporting oval, I was confronted by myriads of tents of all descriptions, hundreds of vehicles, and met with a cord al we'come by the VK3 group, immadiately renewing old friendships and meeting new faces as well.

Night had by this time fallen and, following the usual social chatter commonplace amonost amateurs, a most comprehensive briefing by gaslight was conducted by John Payne VK3AED, As I was not the only newcomer to the group, John went to some considerable trouble in extending the briefing with an extra special section for those such as I who were not completely familiar with the organisation of the race and the radio nets so necessary to the safety and smooth running of the event. A little further social chat ensued and then it was sleeping bags ready and bed down for the night. Half expecting a rough shake and a "Wakey, Wakey, Rise and Shine" call in the morning I was pleasantly surprised to hear amid the twittering of the birds and, believe it, the



WICEN craft, with operators enjoying a "cool-off" in the Murray River



Ian Hunt VKSQX operating one of the portable links cai of a lookaburus enhoring us to beair conceives at a fairly early hour, the fittings of the one of the strains of the song "Morring Has Broken" coming out over an amplifying system, and growing looker as the public address whiteless and properties of the strains country town. I might add that by the contract outset your in limph and that by the contract outset your in limph and that by the contract outset your indiges, "Morring has strains of any other strains of a special Anyway, now for my first leason in WICEN operation, Carlos et al. (WICEN operation, Carlos et al. (WICEN operation), WICEN operation, WICEN

At this point I feel I should explain how the organisation, nets, etc., were comprised and operated together by necessity with some details of the canne race itself. The race itself is divided into 5 daily periode with stance covered by the canonists as follows Day 1, 92 km. Day 2. R6 km. Dev 3. 77 km: Day 4, 62 km; and Day 5, 76 km. The actual starting and finishing points are Day 1. Yarrawanga to Tocumpal Day 2 Tocumpal to Picnic Point: Day 3. Pionic Point to Echuca: Day 4. Echuca to Torrumbarry, then a portage section to Murrabit. Day 5 being from Murrab.t to Swan Hill and finishing on New Year's Eve. Between the starting point (S....Sierra) and the finish (F....Foxtrat) up to four land based check points are set up at the river's edge, these being designated noints A — Alphs. B — Bravo, C — Charlie. end D - Delta. At all these points are located stations with both HF (3.6 MHz) and VHF (148.0 MHz) canability Most, if not a stations erect wire diop as for MF and where possible gain antennas (beams, co-inears, etc., for VHF, At each of the check points Rece Marshalls and First Aid personnel are also present.

The station at the start of the race is usualy first to set up with the other operators proceeding by road to their nom nated check points and coming on air as soon as possible. Up until such time as the station at the finish is operational the station at S - Sierra acts as Net Control, finally handing over an established net and Control to VK3AWI at F-Foxtrot where the Race Information Centre (RIC) is also established. As well as these stations, others operating only on VHF are installed on power boats which take up position on the river approximately midway between each of the land check points. Thus a power boat mid-way between check points Sierra and Alpha is designated as being at Sierra/Alpha 5. The '5' indicates that the boat is approximately 0.5 of the distance between A and B and should it move further downstream can indicate its estimated position as for example, Sierra/Alpha 9, i.e. 0.9 of the distance between S and A.

Each of the boats carries at least a complement of three, namely radio operator, First Aider and of course the skipper Thus there is always someone in good position to both observe the canceists,



Left to right: Nick Batten YK3NB, Ken Williams and Jack Batten socialise after a busy day

 to wagaries of propagation, high river banks, dense follings, site. To this and a mobile station with both Hir and VHF careal parallel with the river course keeping pace highly designated "Both Risky" the River Course keeping pace and with the river course keeping pace and excellenge and provide a "III" in point for communications. The thrif station received his a land flower whole fitted out to provide service as a medical execution unt and designated Medivac III position in the whole also maintains its position in the week, being filter with raided it can be were, being filter with raided it can be were, being filter with raided it can be

called upon at a moment's notice in the case of emergency. Thus the nets and stations are set up Messages passed by the networks are varied in nature and typically may take the following forms.

- Service Messages. These are messages or iginated by the participating stations and dealing only with operation of the net, station status, etc.
- Urgent Messages Matters of safety, first aid requirements, etc
- Routine Messages. Details of canoes started, numbers passed particular check points, withdrawals, etc.

The finish station (F), as mentioned before, is set up in conjunction with the Race Information Centre and normally located in the back of a large van. As the cances, which totalled up to 385 in number, pass each check point along the river the marshall at the check point makes out a message detailing the cance numbers concerned and hands it to the check point station for transmission to the control station and RIC. Such messages usually contain up to 25 numbers and were passed during the merathon with rapidity and accuracy. Experience in Contest operation would certainly be useful here. At the RIC a area board showing all cance numbers and race sections is displayed. A golf tee placed opposite a cance number beneath a check point number indicates the posttion of each cance when last reported. Thus for interested spectator members of the public, supporters and land crews associated with the canoelsts an almost immediate picture of cance progress is provided, and organisers can keep themselves comprehensive y informed as to what is going on. In the case of the boats, should any cancelst appear to be experlencing difficulties, such as favouring a shoulder suffering from exhaustion or the like the first alder doing the observation can rad o shead to the next land check point suggesting that the canoeist concerned should be called in and checked or any other appropriate action taken Thus the Importance of the radio facilities provided can easily be seen and the contribution to the safety of all concerned be understood.

Now for a few more of my own personal observations and experiences.

THE CANOEISTS

Somet mes quite a sight both on the water and out of their cances. Faces covered with zino cream, a welf assortment of this, town, an occurrent purpose the second property of the seco

THE OFFICIALS

The Marshalls obviously well aware of their jobs and very well organised. There were various categories of Marshalls such as Traffic. Check Point and Camo Marshalls. One thing amongst many did, however, impress me. At each of the stopping places each night, the whole entourage, approximately 4000 people in all camned at the local football oval or showgrounds. Upon entering the said camping area we were greeted at the entrance by a camp marshall, directed to our particular area within the grounds and handed a large green plastic gar-bag within which to place our accumulated rubbish. The next morning after the camp was cleared these marshalls further ensured the tidiness and cleanliness of the area by collection of the par-bags and any other litter left behind. Thus a most responsible approach to the local environment was generated.

ORGANISERS

These officials were most courteous and helpful and seemed well informed as to the whole operation. Questions were answered with no difficulty and in the main immediately.

RED CROSS

Meals were provided for supporting officials on payment of a small fee However I had no need to avail myself of this facility as Alex VK5CCT had arranged to carry with his sel-up enough provisions to my way of thinking to feed a small army anyway. Canceists and their land support groups had, however, to fend for themsalves. The Red Cross also ran a mobile stall where one could purchase such things as souvenirs, T-shirts, badges, stickers, drinking mugs, sun hats, etc. At each stopping place a "massage parfour" was set up where paddle weary competitors could go to stretch out on the tables and have their tired and aching muscles expertly eased by a rub-down I didn't hear of any travel weary amateurs availing themselves of this service. I wonder if climbing trees tires one as much as paddling a canon?

THE WICEN OPERATORS

Certainly a most self-reliant and versatile group. Setting up camp sites, repairing equipment, both whilst on the move and by torchlight at night on the bonnet of a motor vehicle. Unsoldering heavy joints on Alex's gas barbecue when repairing an antenna. Contributing useful suggestions at each debriefing and pre-briefing at the end of each day. Charging batteries under adverse conditions, running power cables with a multitude of double adaptors, leads and outlet boxes where power could be obtained at a campsite. Fixing up broken leads, checking power meters, petrol generators, making new leads and antennas, organising makeshift stations and supplying extra equipment where needed, You name It, and they probably did it. Perhaps an excerpt from the Melbourne "Herald" of 29th December, 1978, would not go astray at this point.

It read as follows -

"SMOOTH RUNNING — BUT NOT FOR AIRWAVES"

"Radio messages vital to the safe running of the Red Cross Murray River Canoe Marathon were running hot vesterday Amateur radio operators Peter Mitchell and Geoff Elev had smoke pouring out of their transmitters. Their zener diode and their power transformer had burnt out under the strain and no parts were available locally. But not to be nut off the enterprising operators but on the idea of getting the parts they needed from an old television set, and where better to find an old TV set but at the local Togumwal tip. Sure enough a quick scour of the tip turned up a zener diode for Mitchell of East Brighton but Eley of Box H.II North did not have the same luck. And now the radio operators on the marathon have decided to form a raiding party to sift through the tip at each of their stopping places in search of the vital spare parts they need to keep their communications network. The operators are volunteer members of the Wireless Institute Civil Emergency Network who have given their time to help keep track of all the entrants in the marathon. Well, some journalistic licence allowed

sevent, some journalists interface another and transformers are as stated, in view of the fact that many of the focal service clubs along the river support this event to add the Red Cross, we were a tittle concredibit at one of them may have seen the newspaper article and decided to help us in their own way. Imagine waring up in the morning to find piles of old TV thest dumped outside your test entrance.

The WICEN operators, both OM and YL, did however, spart from displaying their skill and versatility on the technical study show a magnificent splint of camardarie, interest, dedication and nelpfulness throughout the event cespite the late hights and early mornings, tirediness, dust, anis, lies and at late primitive confuctors pre-times and at lates primitive confuctors pre-gratuated apart from the excellent of the property of

SETTING UP A CHECK-POINT

Throwing hefty adjustable spanners stateched to cords through tree branches one could become an expert at, with the control of the control of

and out of the way. We had our own satisfaction, however, in seeing one fall off after one tangle and another one of the blkes blow up its engine. Most unsporting of us maybe, but that's human nature on our part. The antenna still worked well after repair, too, Alex VK5CCT had as his installation an FT301 HF transceiver and Asahi centre loaded whip, Kyokuto 2 metre FM rig with a co-linear antenna homoer mounted, plus en assortment of antennas which could be strung up by various means. This equipment functioned well throughout both at fixed check points and also while mobile, 240 volt mains were found at times in the most unusual places along the river, however the 2.5 kVA generator did sterling work from time to time. The TS520 and back-up Kyokuto with 60 watt ampifler were pressed into service as control station on several occasions and worked well Headphones were used quite often to obviste problems of local acoustic noise, noise between operators working side by side and to maintain a certain amount of privacy from the public where discretion was necessary or messages would appear to be of a sensitive nature

A group of elderly fishermen provided some interest. Apart from a pleasant chall It was most interesting to see their "goldmine". Layers of bank notes and newspapers spread on the ground. Yes, one of them had fallen into the river with all their fishing trip money and I came along as they were drying the money out. They were keeping a careful watch on it, how-

FINDING A CHECK-POINT This can also be most interesting. Some

of the check points are at almost inaccessible places and a network of uns apposted dirt tracks, if they can be called even that, can cause you to go in the wrong direction for a while. From Tocumwal to Check Point Brave for Day 2 should have meant a distance of perhaps 50 kilometres. A tour through the southern Riverina area, eventually via Deniliquin and Mathoura close to where the day's rup was to finish, then beating back through the scrub up river to the check point, to cover a total distance of about 17 kilometres, proved most interesting to us. Dusty though! We still made it before the cances arrived Better maps for this particular area would of course be helpful if they were available. [think they chose Alex for this one especially as he had a four wheel drive.

THE FINAL DAY (AND NIGHT)

- AND FUNNY SIGHTS

The last day of the Marathon found Alex and myself at a scenic spot on the river near the bridge at Murrabit. This time a smaller borrowed generator was used to power the TS520, the larger unit being loaned out for one of the other stations. The problem of a missing adaptor to suit. the main lead to the Japanese generator was solved by a call on VHF to one of the other operators passing pearby in his vehicle, thus obviating the need to plug in with bare wires held in place with match sticks. The problem of the transceiver not transmitting and receiving on the same frequency plus FMung of signals on receive was solved by running the generator to provide 240V 60 Hz, with the 50/60 Hz switch in the 60 Hz position and not the 50 Hz position for 60 Hz supply A most unusual fault, as on receive in particular the current drain would have been very low. Has anyone an explanation? The race starter duly appeared with his list of canoes despatched to inform us also that it created a race record for the number of canoes to start on the fifth day. His pololon was that the excellent weather experienced was the reason. The really hot weather had not begun at this stage and competitors were finding conditions much to their liking

Activities at the start having wound up, we enjoyed a pleasant chat with a Novice operator from the nearby New South Wales town of Barham who had heard the strong signals we were putting out and came to investigate. This area being the local stamping ground for 5CCT, we then travelled leisurely to visit some friends of his nearby and were treated to Christmas cake and rich milk coffee made with milk provided freshly from their own cow, Following this pleasant morning tea interlude we then travelled in convoy to Swan Hill, myself ferrying a vehicle for one of the operators whose duty for the day was on one of the power boats. Upon arrival at Swan Hill we proceeded to the Control Station at the finish line to which we had handed over the net somewhat earlier. I then provided some operating assistance while Alex set up camp at the Swan Hill showgrounds and then went back up river to provide another check point. Fortunately for me I had no duties to perform as the first of the canoes to cross the finishing line appeared around the island upstream of the finish. Whilst first across the line does not necessarily mean that cance is the winner, as it is a timed event and six different canoe categories apply, I imagine that fine houghs do still mean something. The first two canoes to appear were Double Canadian types. Even after the last day's distance of 76 km, these two canoes crossed the line with the two paddlers in each paddling like crazy and with no more than about two feet separating them at the finish mark. Needless to say, the substantial crowd appreciated the battle waged and clapped and cheered for all they were worth. To make the finish more spectacular and exciting the official starter was there with his loud muzzle loading powder gun which he fired as the first canoe crossed the line. At this occurrence a very large brown retriever type bird dog, which had been standing near the river's edge, obviously watching everything with alert interest, apparently decided that someone had just maybe shot a duck, and bounded forward into the water to begin swimming downstream after the canoes. The dog crossed the line in third place and gain no on the canoes at this stage. I could complete this part of my story by telling you that the dog then retrieved one of the canoes with its two occupants, but you probably wouldn't believe mel The last competitors arrived at the finish at approximately 7 n.m. following which the whole network finally closed down after a most successful five days of operation This, however, was not the end of the event, as it was, after all, New Year's Eve. That even ng the crowd gathered in the centre of the beautifully grassed Swan Hill showgrounds to witness the presentation of medallions to the placegetters in each section and category. including the handing of perpetual trophies to the winners of each class. Then the New Year's Eve celebrations really began. Leading up to, through and lust after midnight was marked by the booming reception of the 10 MHz timing stations WWV and JJY coming from the loudspeakers in one of the amateur operator's vehicles. By 0200 hours on New Year's Day I was observing one of the strangest sights I had seen in years. On every antenna on almost every vehicle crammed into the showgrounds between the myrlads of tents and other equipment scattered about was placed an upturned empty beer can. This applied even to the vehicle broadcast antennas, and you can just imagine what a sight presented itself in the case of the radio amateur section of the camp with up to six antennas on a vehicle. I might add that later in the night I removed the beer cans from the antennas on our vehicle and replaced them with a soft drink can on the roof the Land Cruiser to indicate to all that Alex and I were of the sober gentlemanly type.

New Year's Day was then spent with Alex and his family at Kerang, meanwhile sorting out all the equipment and reinstalling my mobile gear for the trp home. A most pleasant journey was begun early the following morning and with the sun behind me for most of the journey I returned along the picturesque Hume Valley Highway, operating again 20 metre and 2 metre mobile By the way, I did call in for that promised cupps at Mildura and spent a pleasant two hours with the husband and wife team of Ray and Joan 3BRB/3BJB

Before closing I would like to say that I enjoyed very much the company and friend/iness extended to a visiting VK5 operator by the VK3 WICEN Group on the Murray River Canne Marathon, I learned much and had a most Interesting experience overall So, if you enjoy a chalenge and are looking for adventure maybe you should talk to John Payne VK3AED and find out about assisting WICEN and joining in this and other like activities when they are held

CUSTOM COMMUNICATIONS

TS600 5850 an



s185 on

s43 pn

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TS 120 c630 an

SP 700 s43 nn

TS-700SP 5875 an

VFO-7008 s157 an

The TS 700S is the all mode solid state transcewer that provides you with veriatility plus over the entire 2 mater hand. It's feature packed design puts you on SSB, FM, CW, and AM. The AC and DC power supplies are built in which allows you to operate the TS 700S just about anywhere Equipped with a VFO that anables continuous tuning from 144-148 MHz. TS-700S comes complete with built in digital frequency readout, receiver preamplifier, VOX, sidetone, and microph



SP820 s70 en

TS-820S \$1300 aa

VF0820 s185 ac

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NOVICE NOTES

SOLDERING HINT

With the Scope so dering iron wire a 6.3 vot dial amp across the secondary of the Scope transformer. You'll know that good contect to being made inside the good contect to being made inside the first part of the secondary of th

Before soldering, clean the surfaces, wires, etc., with scouring pad raiher than steel woo. The scouring pad is non-conducting and broken-off pieces won't create short circuits in wiring later on.

(From Zero Best, September 1978.)

80 Mx ACTIVITY

Stations heard on Saturday p.m. 8/1/79 from Riddell's Creek (north of Sunbury) on 80m. Samples taken every five minutes from 8.15 p.m. until 9.45 p.m. Band divided (nto 3 segments, 3.500-3.525 3.525-3.625, and 3.895-3.700.

	3.506-	3.525-	3,625-
	3.525	3.625	3.700
8.15	D	12	2
20	1	14	4
25	1	14	3
30	2	16	4 3 3 4 4 5 5 5 4 5 8
36	1	18	4
40	2	10	4
45	1	14	3
\$0	2	13	3
86	3	14	3
9.00	2	14	4
05	3	13	3
10	2	13	2
16	2	14	3
20	2	15	5
25	3	17	8
30	2	13	5
35	1	13	8
40	2	16	5 8 5 8 7
45	1	14	
Average	1.7	14	4.2

★ ★ ★

PIRATES ON TEN METRES

As you may already be aware, several suppliers have a range of crystals for the 27 MHz Manne transceivers which are called "H side" crystals.

These are specially made received crystale which are higher in frequency than the transmit crystal. The received crystal are normally on the low side of the transmit crystal, which puts the receiver's mage frequency right into the 27 MHz chook band channels, causing no end of lotterfernors.



EGG CARTON STORAGE

What to do with that old egg carton, One suggestion is use it as a temporary com-

ponent holder, helps to keep the workbench a little tidler

In order to help the poor 27 MHz Marine user, receive crystals for the high side of the transmit frequency are available, which puts the image out of the way of the chooks . . . and straight into the kilowatt alley sec

Anyway, we now have a transmitter operating on or about 27880 kHz with a high-side receive crystal on or about 28335 kHz.

But then you take a second look at the frequencies in use for the cryatals and you ask yourself: What If I reversed the crystals in the set so that the receive local oscilator is on 27880 and the transmitter on 28335, then I'd have a 25 MHz set operating on 28335. With the other crystals svallable, I could have 26345, 26355 and 28365 also.

I ask you then: What is to stop the pirate HFer buying these crystals and doing just what I have suggested. The answer is nothing, nothing at all. While these crystals are really only suited for AM equipment, the chook that "wanted to get away from it all" cheaply and simply could do so with them.

Perhaps it will never happen that way. Perhaps, too, it would be a good ides to scan through the above frequencies to keep an eye on what activity springs to life. (You may even be so lucky to catch my wife VKZNID on 28335 using her handheld risc.)

So there is an idea for amateurs to get on ten metres AM with old chook band sets, and maybe the above frequencies could become a sort of standard channel arrangement for this type of equipment if there is enough legitimate activity on those channels, then let the prate beware Note. If you wire on 28335 and re-

quired some assistance in a hurry and had

no reply on that frequency, you could reverse the crystals and cell on 27880. Another useful feature of the system.)

VK2ANF In QUA, Hornsby and Districts ARC, Vol 1, No. 4.



(From "SWARS", Dec. '78)

TRY THIS

WITH THE TECHNICAL EDITORS

HOME-BREW OIL

Stephen Garner VK2AXM 69 Mecmiller Street, Seaforth, 2092

Here is one method of home-brew QSL that may interest those who operate QRF

(flow finance)

The heart of the system ries in the fact that most "plain paper" photo-copying machines will accept lightweight card

board as well as paper

The paper size the photo-copier at work will accept is such that six cards can be produced with every print. So my master copy has six cards on it, each one an odity dual.

The master copy can undoubtedly be as intricate as one desires. Mine was fairly straightforward, the basic information was typed on, and my call sign was made out of letters out from the afternoon papers. Rather along the lines of the ransom notes seen, n. the moviers.

The cardboard I used is lighter than that found in most QSL cards, which probably peases the Bureau. I was fucky enough to find a large pile of it in our attic, so there is no money outland there.

The quality of the card produced by this method is not 'world shetsring', but it makes a useful stopps if one is anticipating a change of icence, e.g., novice to full cal, which is why I originally used this system.

To Radio Confirming QSO with

VK2AXM

GMT

on at Freq. MHz

Report, R S Rx/Tx,

Power, Watts In.
Antenna.

Stephen Garner

65-69 Kent Street, Sydney, NSW, 2000 Australia P&e/Tmx, QSL, 73'&

PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

Compiled by R. Champness VK3UG Photos by Ken Reynolds VK3YCY

11. The ATS transmitter is the companion to the AR8 communications receiver. In 8 frequency bands it covers 140 kHz to 500 kHz and 2 kHz to 20 MHz, it is VFO controlled on LF and MF and either crystal or VFO controlled on HF The ATS is designed to transmit AMYCW/MCW or product to the ATS of th

with an output power of nominally 50 walts. Like its companion receiver it was used in seroplanes, ships and on land, an extremely versatile transmitter. The output stage of the fransmitter consists of 2 — 507 in parallel, which are grid modulated for AM and MCW, Not an easy set to ser-

vice but patience and a copy of the handbook made the job possible. The set obtained power from 12 or 24 volt genemotors or from the type S 240 volt AC power supply. The current drain on 12 volts is of the order of 35 amps with the









receiver and transmitter operating and the transmitter key down

The ATS proved to be a very popular transmitter with amateurs after the war of 1939-45. It had many modifications done to it, such as plate and screen modulation. operation on 160 metres, and so forth They were used in the Antarctic and as bushfire brigade base stations in modified form, There are probably not many left operating now, but at one time were probably the most popular amateur home stat on transmitter in Australia.

12 Aerial Coupling Unit for AT5. This is used with the AT5 to match the transmitter to a rather wide range of serials over a very wide range of frequencies. Like the transmitter It is arranged into two sections one section for MF and the other for HF so that things didn't become top complicated inside the unit. On the MF ranges the unit will match serials which exhibit a resistive component of between 5 and 100 ohms and 95 and 500 pF reactive. On HF the unit will match and fed serials much shorter than a quarter wavelength to considerably over a wavelength A well designed unit of moderate efficiency. Not greaty used by amateurs as its features were not suited for most amateur

periole EDITORS NOTE:- This now completes the series in portable army wireless sets of

WW II Many thanks to Rodney VK3UG in collating the series and to Ken VK3YCY for the photography

VK3UV

AMATFUR SATFLLITES

Bob Arnold VK3ZBB

AMSAT NEWSLETTER hear that the AMSAT Newsletter for

December was delayed and therefore not completed until the end of January. This news letter may be sent by sea mail; if this is so receipt may not be expected before April. If you have any complaints regarding the delivery of the AMSAT News Letter please refer them direct to AMSAT.

The battery power of OSCAR 7 has now deteriorated to such a degree that all telemetry is unintelligible. As this satellite is now, unfortunately, unlikely to be worked again, no further predictions will be given. DECARUE

This satellite is working well on both Modes and will probably remain our only satisfactory method of communication until Phase 3 is launched later this year

From time to time AO8 has operated on Modes A and J concurrently, having been programmed to do so for special purposes such as DX operations and special educational studies on Wednesday evenings.

RUSSIAN SATELLITES Apparently both RS 1 and RS 2 continue to

be in proper orbit although it has been

Channel No.	Address	Parameter	Measurement Limits	Decoding Formula
01	Р	Calibration	01	
02	l c l	Transponder Output Power (mW)	60-990	10 x N
03	F	Radiator Temperature (degrees-C)	-30 to +80	N
04 *	l z l	Command/Telemetry Section Temp. (")	-30 to +80	N
05 *	L.	Power source voltage (V)	11 to 18	0.2 x N
06 *	В	Regulated voltage No. 1 (V)	8.5 to 9.5	02 x N
07	H	Regulated voltage No. 2 (V)	7 0 to 8.0	0.2 x N
08	0	Illumination on panel No. 1 (*)	01 to 95	
09	W	Illumination on panel No. 2 (*)	01 to 95	
10	K	Illumination on panel No. 3 (*)	01 to 95	
11	U	Iffumination on panel No. 4 (*)	01 to 95	
12	G	Calibration	01	
13	R	Transponder Output Power (mW)	60-990	10 x N
14	D	Body Temp. (?)	01	
15	S	Battery charging current (ma)	0 to 500	10 x (50-N

End of Frame-1. Each telemetry channel will end in either U (when transponder is OFF) or W (when the transponder is commanded ON), with either RS (when transponder

is OFF	or RS R	S (RS twice) when transponder is ON		
16	P	Battery No. 1 voltage (V)	11 to 18	0.2 x (N+12
17	C	Battery No. 2 voltage (V)	11 to 18	D.2 x (N+12
18	F	Battery No. 3 voltage (V)	11 to 18	0.2 x (N+12
19	2	Battery No. 4 voltage (V)	11 to 18	02x(N+12
20	L	Body temp. (?)	01	1
21	В	Power computing circuit temp. (deg. C)	30 to 80	N
22	H	Battery charging current (MA)	0 to 500	10 x (50-N)
23	0	Illumination on panel No. 1 (*)	01 to 95	
24	W	Illumination on panel No. 2 (*)	D1 to 95	
25	K	Illumination on panel No. 3 (*)	01 to 95	1
26	U	Illumination on panel No. 4 (*)	01 to 95	
27	G	Illumination on panel No. 1 (*)	01 to 95	
28	В	Illum:nation on panel No. 2 (*)	01 to 95	
29	D	Illumination on panel No. 3 (*)	01 to 95	1
30	S	Illumination on panel No. 4 (*)	01 to 95	

End of telemetry Frame-2. Each channel ends with a K or an O. K when the transponder is commanded OFF, and O when is commanded ON, RS once when the transponder is OFF, and RS RS (RS twice) when it is ON

(***) by command, there is a SHORT version telemetry of ONLY seven (from 01 to 07) channels

noted that RS 2 is falling further behind RS 1 as each week passes.

As at the end of January, RS 2 was thirty minutes behind BS 1 and 5° further West at acquisition.

We still have little information on these satellites although the orbit predictions do seem to be reasonably accurate. The transponders are rarely operating although VK4ZIL does report communication on late night passes (South to North).

On many days during January, neither the transponder nor telemetry was heard but the reason for this complete closedown was not known. One can only hope that by diligent listening, it may be possible to find one or more satellites in working condition.

As indicated last month 1 am pleased to provide information on the telemetry system of the R.S. satellites. This information is produced by courtesy of QST of January 1979. As previously mentioned the telemetry Information can be in the form of 7, 15 or 30 channels, each channel being in the form of 1 letter, 2 digits and a concluding letter, e.g. C18U. The Information given below will permit interpretation of the telemetry.

OSC				RUSSI	AN FIS.1	
Date	Orb. No.	liqz Z	- W	Orb. No.	Eqx	Equ v W
1	5459	0130	66	1876	0052	124
2	5473	0135	87	1888	0058	127
3	5487	0140	68	1900	0101	130
4	5500	0002	44	1912	0106	133
5	5514	0007	45	1924	0111	135
6	5528	9012	46	1938	0115	139
7	5542	8100	48	1946	0120	141
8	5558	0023	49	1980	0125	144
9	5570	0028	50	1972	0129	148
10	5584	0033	52	1984	0134	149
11	5598	0038	53	1996	0139	152
12	5612	0044	54	2008	0144	155
13	5626	0049	58	2020	0148	1.57
14	5640	0054	57	2032	0153	160
15	5654	0059	58	2044	0158	183
16	5888	0104	59	2055	0002	135
17	5882	D109	61	2087	0007	138
18	5698	0115	62	2079	0011	141
19	5710	0120	63	2091	0015	144
20	5724	0125	65	2103	0021	148
21	5738	0130	68	2115	0026	148
22	5752	0135	67	2127	0030	152
23	5766	0141	69	2139	0035	155
24	5779	0003	44	2151	0040	157
25	5793	0000	45	2163	0044	160
26	5807	0013	47	2175	0048	163
27	5821	0018	48	2187	0054	188
28	5835	0023	49	2199	0059	168
29	5894	0028	51	2211	0103	171
30	5863	0034	52	RS 2 is 2	0108	174

Page 32 Amateur Radio March 1979

AUSTRALIAN VHF CENTURY CLUB AWARD

Rules as amended 1.1 79 DUJABUTE

1.1 This Award has been created in order to stimulate interest in the VHF bands In Australia, and to give successful applicants some tangible recognition of their achievements.

1.2 This Award, to be known as the "VHF Century Club Award", will be issued to any Australian Amateur who satisfee the following conditions

1.3 Certificate of the Award w.ll be issued to the applicants who show proof of having made one hundred contacts on the VHF bands, and will be endorsed as necessary for contacts made using only one type of emission.

REQUIREMENTS

2.1 Contacts must be made in the VHF Band (Band 8) which extends from 30 to 300 MHz, but such contacts must only be made in the authorised Amateur Bands in Band 8

2.2 In the case of the authorised bands between 30 and 100 MHz, verifications are required from one hundred different stations, at least seventy of which must be Australian The Amateur Bands 50 to 54 MHz and 56 to 60 MHz will be counted as one band for the purposes of the Award 2.3 In the case of the authorised Amateur

Band between 100 and 200 MHz, verification from one hundred different stations are required.

2.4 It is possible under these rules for one applicant to receive two certificates, one for each of the authorised

Amateur Bands nominated in Rules 2.2 and 23 25 The commencing date for the Award Is 1st June 1948 All contacts made on or after this date may be included,

OPERATION 3.1 All contacts must be two-way contacts on the same band, and crossband

contacts will not be allowed. 3.2 Contacts may be made using any authorised type of emission for the

hand concerned 3.3 Fixed stations may contact portable/ mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within

the same call area. 3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the

same type of endorsement. 3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z or Y call sign who is subsequently contacted as a full ACCP holder

3.6 All stations must be contacted from the same call area by the applicant (except as below), although if the applicant's call sign is subsequently changed, contacts will be allowed under the same call area.

If the applicant moves to another call area, contacts must be made from within a radius of 150 miles of the previous location to qualify for award purposes. If the distance of the new location from the old exceeds a radius of 150 miles, a separate application for a new award must be made claiming only contacts made from the new location.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its SUCCESSOR

VERIFICATIONS

41. It will be necessary for the applicant to produce verifications in the form of OSI cards or other written evidence showing that Iwo-way contacts have taken place

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station worked. the date and time of contact, type of emission and frequency band used. the report and the location or address of the station at the time of contact

4.4 A check list must accompany every application setting out the following

4.4.1 Applicant's name and call sign, and whether a member of the WIA or not

4.4.2 Band for which application is made, and whether special endorsement is involved 4.4.3 Where applicable, the date of

change of call sign and previous call sign. 4.4.4 Details of each contact as re-

quired by Rule 4.3 4.4.5 The applicant's location at the time of each contact if portable/

mobile operation is involved 4.4.6 Any relevant details of any contact about which some doubt might exist.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of a Division of the Wireless Institute of Australia, or two licensed amateurs known to the applicant, should accompany each application for membership or adjustment of verified country totals.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager of the Wireless Institute of Australia, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired

5.2 A nominal charge of \$1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the VHFCC wishing to have their verified totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager 54 In all cases of dispute, the decision

of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the Interpretation and application of these Rules shall be final and binding

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.

WORKED ALL VK CALL AREAS (VHF) AWARD

Rules as amended 1.1 79 OBJECTS

1.1 This Award has been created in order to stimulate interest in sustained long distance working in the VHF bands in Australia, and to give successful applicants some tangble recognition of their achievements.

12 This Award, to be known as the "WAVKCA (VHF) Award", will be issued to any Amateur who satisfies the following conditions

13 Certificates of the Award will be issued to the applicants who show proof of having made contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in

each area is also shown

REQUIREMENTS

2.1 Contacts must be made in the VHF Band (Band 8) which extends from 30 to 300 MHz, but such contacts

Amateur Radio March 1979 Page 33

must only be made in the authorised

- Amateur Bands in Band 8.

 2.2 Verifications are required from all of the call areas in accordance with the details given in the Appendix. A total of 22 confirmations will be required.
- of 22 confirmations will be required.

 2.3 The commencing date for the Award is 1st January, 1958. All contacts made on or after this date may be included.

OPERATION

- 3.1 All contacts must be two-way contacts on the same band and cross-band contacts will not be allowed.
 3.2 Contacts may be made using any authorised type of emission for the
- band concerned.

 3.3 Fixed stations may contact land portable/fand mobile stations and vice verse, but land portable/fand mobile station applicants must make their
- station applicants must make their contacts from within the same call area.

 3.4 Applicants, when operating either land portable/land mobile or fixed, may
- contact the same station licensee but may not include both contacts in the one application.

 3.5 Contacts made with ship or aircraft stations or contacts made with the sid
- of repeaters or translators of any kind will not be allowed.
 3.6 Applicants may only count one contact for a station worked as a Limited
- tact for a station worked as a Limited Licensee with a Y or Z three-letter call sign, who is subsequently contacted as a full AOCP holder. 3.7 All stations must be contacted from
- the same call area by the applicant (except as below), although if the applicant's call alon is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area. If the applicant moves to another call area, contacts must be made from within a radius of 150 miles of the previous location to qualify for award purposes. If the distance of the new location from the old exceeds a radius of 150 miles, a separate application for a new award must be made claiming only contacts made from the new location.
- 3.9 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successfr.

VERIFICATIONS

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant
- 4.3 Each verification submitted must show the date and time of contact, type of

emission and frequency band used, the report and the location or address of the station at the time of contact

- of the station at the time of contact.

 4.4 A check list must accompany every application setting out the following
 - 4.4.1 Applicant's name and call sign and whether a member of the WIA or not.

 4.4.2 Band for which application is
 - made.
 4.4.3 Where applicable, the date of
 - change of call sign(s) and previous call sign(s). 4.4.4 Details of each contact as re-
 - quired by Rule 4.3.

 4.4.5 The applicant's location at the time of each contact if land portable/land mobile operation is involved.
 - 4.4.6 The call sign of the station worked.

 4.4.7 Any relevant details of any contact about which some doubt.
- 4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certlied by the Awards Managar, Sacretary or Council Member of a Division of the Wireless Institute of Australia, or two licensed amateur shown to the applicant, should accompany each applicant, should accompany each applicant, should accompany each

might exist.

APPLICATIONS

- 6.1 Applications for membership shall be addressed to the Federal Awards Manager of the WIA, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
 5.2 A nominal charge of \$1, which shall
- also be forwarded with the application, will be made for the Issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia
- Institute of Australia.

 5.3 Successful applicants will be listed periodically in "Amateur Radio".
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.
- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.

NOTES

- In areas above, where more than one confirmation is required, contact may be made with any or all of the Territories grouped together.
- Where a Territory is no longer under Australian jurisdiction, contacts up to the date of independence will be accepted.

APPENDIX				
Territory	Call	QSLs required		
Australian Antarctica Heard Island Macquarie Island	VK0	1		
Australian Capitel Territory	VK1	1		
Lord Howe Island State of New South Wales	VK2	3		
State of Victoria	VK3	3		
State of Queensland Thursday Island Willis Island	VK4	3		
State of South Australia	VK5	3		
State of Western Australia	VK6	3		
Flinders Island King Island State of Tasmania	VK7	3		
Northern Territory	VKB	1		
Admirally Islands Bougainville Island Christmas Island Cocos Island New Gulnea New Ireland Norfolk Island Papus	VK9	1		

HEARD ALL VK CALL AREAS (HAVKCA) AWARD

Rules as amended 1.1.79.

- 1.1 This Award was created in order to stimulate interest in the loggling, by both Austraia and overseas Short Wave Listeners, of the various call areas of the Commonwealth of Australia and its Tarritories, and to give successful applicants some tang-ble recognition of their achievements
- 1.2 This Award, to be known as the "HAYKCA Award", will be issued by the Wireless institute of Australia to any Short Wave Listener in the world who is a member of an affiliated society of the IARU who satisfies the following conditions. An SWL resident in Australia or its Territories may be eligible for the Award.

1.3 A certificate of the Award will be issued to the applicants who show proof of having logged stations in all the Australian call areas as listed in the Appendix, No endorsements are available.

REQUIREMENTS

2.1 Verifications are required from all the call areas of Australia and its Territories as shown in the Appendix. In all, 22 verifications are necessary

- 2.2 The commencing date of the Award is 1st January, 1946. All loggings made on or after this date may be included.
 OPERATION
- 3.1 Loggings may be made of Australian stations using any authorised frequency band or type of emission permitted to Australian amateurs.
- Credit may only be claimed for logging stations using regularly assigned Government call signs.
 Logging of ship or alloraft stations in
- 3.3 Logging of sinip of aircraft stations in Australia or Australian Territories will not be eligible, but land mobile or portable stations may be, claimed provided their specific location at the time of logging is clearly shown on the verification.

4.1 It will be necessary for the applicant

- to produce verifications in the form of QSL cards or other written evidence showing that specific loggings have been made.
- 4.2 Each verification submitted must be exactly as received from the station logged, and altered or forged verifications will lead to the disallowance of those items and may lead to the disallowance of uselfication of the applicant.
 - show the date and time of transmission, type of emission and frequency band used and the location or address of the station at the time of logging.
- A. A check list must accompany every application setting out the following details:
 A.1 Applicant's name. SWL number.
 - If any, and address.

 4.4.2 Name of affiliated Society (see
 - 4.4.2 Name of affiliated Society (see Rule 1.2). 4.4.3 Details of each logging as re-
- quired by Rule 4.3.
 4.5 In lieu of forwarding QSL cards or
 - other written evidence as set out in Rules 4.1 to 4.4 above, a first giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of an artifiated Society, or two ficensed amateurs known to the applicant, should secompany each application.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager, accompanied by the verification cards and the check list (Rule 4.4) Sufficient postage (International Reply Coupons are required from overseas applicants) must be enclosed to cover return postage of the cards to the applicant.

- 5.2 Applications will be examined by the Federal Manager, who will arrange for the Award to be forwarded direct or through the applicant's Society as required.
- 5.3 In all cases of disputes, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.
- 5.4 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them as necessary.

ETF

 In areas above, where more than one confirmation is required, contacts may be made with any or ell of the Territories grouped together.
 VKS- Where a Territory is no longer

under Australian juriediction, contacts up to the date of independence will be accepted.

APPENIII	_	
Territory	Call Area	QSLs required
Australian Anterctice Heard Island Macquarie Island	VK0	1
Australian Capital Territory	VK1	1
Lord Howe Island State of New South Wales	VK2	3
State of Victoria	VK3	3
State of Queensland Thursday Island Wills Island	VK4	3
State of South Australia	VK5	3
State of Western Australia	VK6	3
Flinders Island King Island	VK7	3
Northern Territory	VKB	1
Admiratly Islands Bougainville Island Christmas Island Cocos Island New Britain New Guinea New Ireland Nortolk Island	VK9	1

WORKED ALL VK CALL AREAS (WAVKCA) AWARD

Rules as amended 1.1.79.

1.1 This Award, to be known as the WAYKCA Award, is offered by the Wireless institute of Australia as tangible evidence of the proficiency of overseas/amateurs in making contacts with the various call areas of the Commonwealth of Australia.

1.2 The Award may be claimed by any Amateur in the world who is a member of an affiliated Society of the IARU, but no Australian Amateur will be eligible.

REQUITEMENTS

2.1 A handsome Certificate will be swarded to any applicant who makes contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in each area is also shown, a total of 22.

OPERATION

- Contacts between overseas stations and Australian stations must have been made on or after the 1st January 1946.
- 3.2 Contacts may be made using any authorised frequency band or type of emission permitted to Australian

Amateurs, but crossband contacts will not be allowed.

3.3 No contacts made with ship or air-

craft stations in Australian territories will be eligible, but land-mobile or portable stations may be contacted provided the location at the time of contact is shown on the confirmation.

4.1 The applicant must submit docu-

Papua Territory

- mentary proof, in the form of QSL cards or other written evalence, confirming that two-way contacts have taken place Such verification must show the date and sime of contact, the call sign of the station worked, type of smission and frequency used, signal experts and location (in the signal experts and location (in the one) of the stations contacted. Werfication must be submitted exactly
 - as received, and forged or altered evidence may result in the disqualification of the station concerned
- 4.3 A list, in accordance with the details required in Rule 4.1, must be submitted with the application for the Award

APPLICATIONS

5.1 All claims for the WAVKCA Award must be made by the submission of the confirmation (Rule 2.1), together with the list (Rule 4.3) direct to the Federal Awards Manager. Sufficient International Reply Coupons must be enclosed to cover return postage of the confirmations to the applicant.

- 6.2 Where a reciprocal agreement exists between the WIA and the applicant's Society, the appointed officer of that Society will carry out the check, and if correct, will forward a written application for the Award on behalf of the applicant, together with the list fRule 4.3;
- 5.3 Applications will be examined by the Federal Awards Manager, who will arrange for the Award to be forwarded either direct or through the application's Society. The Federal Awards Manager's decision on the application and interpretation of these Rules will be final and binding.
- 5.4 Notwithstanding anything in the Rules to the contrary, the Federal Council of the WIA reserves the right to amend these Rules as necessary.

APPENDIX

Territory	Call Area	QSLs required
Australian Antarctica Heard Island Macquarie Island	VKO	1
Austranan Capital Territory	VK1	1
Lord Howe Island State of New South Wales	VK2	3
State of Victoria	VK3	3
State of Queens(and Thursday Island Willis Island	VK4	3
State of South Australia	VK5	3
State of Western Australia	VK8	3
Funders Island King Island State of Tasmania	VK7	3
Northern Territory	VK8	1
Admiralty Islands Bougainville Island Christmas Island Cocos Islands Nauru New Gulnes New Ireland Norfolk Island Papus Teritory	vK9	1

accepted.

- In areas above, where more than one confirmation is required, contacts may be made with any or all of the Territories grouped together.
- tories grouped together.

 VK9 Where a Territory is no longer under Australian jurisdiction, contacts up to the date of independence will be

WORKED ALL STATES (AUSTRALIA) AWARD

Rules as amended 1.1 79 ORJECTS

OBJECTS

- 1.1 This Award has been created in order to stimulate interest in the VHF/UHF bends and is of a high standard to fully acclaim the proficency of the recipients on their achievements.
- 1.2 This Award, to be known as the "Worked All States (Australia) Award", will be issued to any amateur in Australia or overseas who satisfies the conditions following.
- 1.3 A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, vtz., New Zesland or Pepus Rear Outse. Countries, the contact with the Australian DXCC Countries out in the Australian DXCC Countries List.

REQUIREMENTS

- 2.1 Contacts must be made on the VHF/ UHF bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz prior to 1/4/64 will count towards the 52 MHz Certificate.
- 2.2 One verification from each of the following areas of the Commonwealth of
- Australia is required (a) Australian Capital Territory.
 - (a) Australian Capital Ter(b) New South Wales.
 - (b) New South Wales.(c) Victoria.
 - (d) Queensland.
 - (e) South Australia.
 (f) Western Australia.
 - (g) Taemania. (h) Northern Territory.
- In all, eight verifications are required 2.3 It is possible under these rules for one applicant to receive one Award for each of the surpovised bank has
- for each of the authorised bands between 30 and 3,000 MHz.

 OPERATION
- All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.
- 3.2 Contacts may be made using any authorised type of emission for the band concerned.
- 3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation
- 3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Statoons in the Amateur Service" or its successor for Australian stations, or in accordance with those Regulations applying in the country of

the applicant in the case of overseas stations.

VERITIEATIONS

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disquasification of the applicant.
- 4.3 Each verification submitted must show the call sign of the station, date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.
- 4.4 A check list must accompany every application setting out the deta's for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether or not they are a member of the WHA.
- 4.5 in lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the detains set out in Rule 4.2, certlied by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the appicant, should accompany each application.

5.1 Applications for membership shall be

- addressed to the Federal Awards Manger of the WIA, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- A nominal charge of \$1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are nor-members.
 Successful applicants will be lated
- periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those submitted at the time of application for membershy, will notify these details, in writing, to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive WIA in the interpretation and application of these Rues shall be final and
- binding
 5.5. Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary

AMATEUR RADIO INTRUDERS

Following a more direct approach by your intruder Watch Co-ordinator to our Administration they are becoming more sensitive and co-operative to our reporting.

Letters pointing out specific cases of persistent harmful interference to Ameteur operators by intruding commercial stations have been sent, with the result that our official monitoring stations are looking into the intrusions and our Administration will file official complaints to the countries concerned.

Specific cases reported are as hereunder designated, but although such are in the limelight more reports would be appreciated —

Radio Tirans, broadcasting on 14330 kHz (now moved to 14320 kHz) at 0500 and 1100 GMT.

The A0 F1 signal on 14016 kHz which changes call signs almost daily, the latest being four letter with "2" inserted —e.g. "NTG2", "WU2H". This station is allegedly in the USSR but more reports are neces-

sary.

The "Piccolo" signal on 21040 kHz
needs more observations, as does a comparatively new one on 14080 kHz — VRQ.
UMS an F1 signal on 21052 kHz transmits
news and propaganda in English and other
languages. MR22 an A1 on 21155 kHz has
been a regular for many years. These all
need further reports, bearing, traffic conmeed further reports, bearing, traffic con-

An excellent method of making the countries indulging in broadcasting and putting out harmonics in the 28 MHz band aware of the harmful QRM that they cause has been alerted to me, it brings instant results, and is a direct method that does not involve any official channels. After identifying the harmonic either by direct identification or by comparing at with the fundamental signal a QSL is made out on your normal QSL card, but crossing out "QSO" and Inserting "Confirming your harmonic of kHz heard here at strength (date) at on (time) on a frequency of

kHz. An excellent program causing harmful interference to amateur operators. Could you possibly remove the harmonic?" The second harmonic of Radio Paris on 14270 kHz was observed and a QSL sent. The result was a letter, a copy of which is hereunder reproduced. This is a translation from the French --"Monsier.

I thank you for your letter regarding the frequency 14270, harmonic of the transmission on 7135. The power of the transmission on 14270 is very weak but we are doing what is necessary to eliminate the annoyance. I hope to hear from you again, best wishes,

Chief of Broadcasting Services."

A QSL was also sent to Radio Peking which resulted in the recipient receiving a lovely 1979 calendar. Thus, as well as official complaints there are other more direct methods that get results, so GO TO IT, and good hunting.

Harmonics already identified are Radio Moscow on 28280, 28350, 28605, 28710; Radio Peking on 28308.

All Chandler VK3LC, Federal IW Co-ordinator.

TECHNICAL CORRESPONDENCE

The Editor, Dear Sir.

I refer to "Practical Hints", page 58 of December 1978 AR.

May I tactfully suggest that all aerial removal tests are inaccurate, misleading, and in case their staff's credibility suffered, were banned by the Victorian Radio Branch (PMG) way back in 1942.

Originally there were two such tests. Yours appears to be a combination of each. All suffer from pre-suppositional weaknesses, and would have died a natural death years ago if the users had understood electrical interference propagation. Because of this, it will very briefly explain.

The first of the two tests (paragraph 3) used to determine if the complainant had a faulty receiver or not "fell flat" when we discovered many receivers had noise producing faults, the noise from which ceased when we removed the aerial.

We, in the Radio Branch, considered the politices ascord test, so believed by "Maline Filter" manufacturers, "Noise Recoiling Antenna" salestone, and some decing Antenna" salestone, and some filter and salestone, and some salestone of the manufacturer's uncorrected maleading advertisements advised noise potential customers to first disconnect their aerials. If the noise cased, the interference was associated to the control of the salestone, and the salestone of the salestone of

I grinned every time I read them. The joke is that nearly all electrical interference is mains-borne, the odds against it being otherwise would be about one hundred thousand to one (100,000 — 1). To carry

the joke further, all mains-borne interference (including TV line oscillator interference) ceases when the antenna is removed. If the noise continues you almost certainly have a fautly set. (Glad you almost agree with us—Ed.)

Obviously, the nose has to get from the nains into the aerial system Most of it enters your home via the SEC service wires. It is then induced from your house wifing into your aerial system. Understanding mann-borne interference, or to give it its original name, "Radio Inductive interference", enabled us not only to find and fix the 40 per cent auditote notes the 60 per cant which we never heard. This was standard practice, every man was expected to use this simple system.

Noise investigation, as many people

Imagine, is not a perpetual series of 'Fox Hunts". Like water flowing through a pipe. noise propagation is predictable. By phase transposition, low voltage noise can be diverted from a complainant's premises. indeed officers of the SEC did this for me at least one hundred times, after unsuccesfully dealing with disagreeable owners of B & W TV sets, causing line oscillator interference. Noise generated in any phase of a three phase low voltage supply will normally confine itself to its own phase and will not "pass through" the transformer to which the three phases are connected, I know of one exception to this rule but I believe It, the device, died an evolutionary death.

If you have an outdoor antenns in the noise induction field of a HY line (usual)/22 kV) the noise will not only be induced into your antenns, but will be in your house wiring as well. Listeners connected to all three low voltage phases will be affected, but remember that the actual HY noise source need not be nearby.

In Victoria (22 kV) this noise source might be up to seventy metallic miles away from a complaining B/C listener (case history), Luckly, because of harmonic attenuation, few amateurs, unless on the metallic miles, would hear it at that distance. Although, in the true sense of the wood. Although, in the true sense of the wood and the complex of the word of the complex of the comp

Years ago, before most tolephone lines were placed underground, it was not uncommon for a noise voltage, generated by a serious 2z ki. VH fault, to be induced
into adjacent telephone trunk lines. If these
telephone lines were doverted across
country eventually to run parallel to
another HV line ween 10 miles away from
then be induced into HV line number two.
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Cliff Manning VK3CJ

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Federal Educational Co-ordinat Graeme Scott VK3ZR

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Amateur Radio Operator's Certificate, Amateur Radio Operator's Advanced Certificate.				
and 3. Amateur Digital Radio Operator's Certificate.	Type of Certificate	Rudio Regulations (Section 1)	Theory (Section 2)	Merse Code (Section 3)
EXAMINATIONS Concidents for the Ameteur Radio Operator's Certificate. Ameteur Radio Operator's Advanced Certificate.	AMATEUR	Multiple choice 60 minutes Part 1 (a)	Written 68 minutes Part II	10 wpm for 5 minutes
cate or the Amateur Digital Radio Operator's Cortificate are required to qualify in various sec- tions as shown in Table 5.	ADVANCED AMATEUR	Multiple choice 60 minutes Part I (b)	Written 50 minutes Part III	15 wpm for 3 minutes
The holder of an Amateur Radio Operator's Advanced Certificate may obtain an Amateur Digital Radio Operator's Certificate by qualifying in Section 2, Part IV, of that certificate The holder of an Amateur Digital Radio Operator's Certificate may obtain an Amateur Radio	DIGITAL	Multiple choice 80 minutes Part I (b)	Written Part III Advanced 60 minutes Part IV D.ghal Technique 60 minutes	Not Required

EXAMENATION CONTENT					
Type of	Rudio Regulations	Theory	Morse Code		
Certificate	(Section 1)	(Section 2)	(Section 3)		
AMATEUR	Multiple choice	Written	10 wpm		
	60 minutes	68 minutes	for		
	Part 1 (a)	Part II	3 minutes		
ADVANCED AMATEUR	Multiple choice	Written	15 wpm		
	60 minutes	50 minutes	for		
	Part I (b)	Part III	3 minutes		
DIGITAL	Multiple choice 60 minutes Part I (b)	Written Part III Advanced 60 minutes Part IV D.gitel Technique 60 minutes	Not Required		

FOR AMATEUR DIGITAL "Systems Analysis for Data Transmissions", by James Martin -Prentice-Hell, Inc., 1974. "Future Developments in Telecommunications", by

James Martin es Prentice-Hell, Inc., 1977. "Computer-Communication Network Design and

Analysis", by Mischa Schwartz — Prentice-Hati, Inc., 1977, "Queuing Systems II", by Leonard Kleinrock -Wiley-Interscience, 1978.

"Elements of Queuing Theory", by Thomas Sasty --McGrew-Hill, 1961, "An Introduction to Microcomputer - Volume 0 --

The Beginner's Book", by Adam Osborne — Adam Osborne & Associates, PO Box 2036, Barkeley, CA, USA,

"Data Communications: Facilities, Networks and Systems Dealgn", by Dixon R. Doll — John Wiley & Sons, 1978.

"Computer-Communications Networks", by N. Abramson and F. Kuo ---Prentice-Hall, 1973. "Advances In Computer Communications", by W.

W Chu -Artech House Raprint Volume 1975. "IEEE Transactions on Communications" --

Special Issue on Computer Communications. January 1977 "Principles of Data Communications", by R. Lucky,

T Salz and E Weldon -McGraw-HIII, 1968. "Error Correcting Codes", by W. Peterson -MIT Press, 1981,

"Handbook of Pulse Digital Devices for Communications and Date Processing", by Herry E. Prentice-Hall Inc. 1970.

"Basic Techniques In Data Communications", by Ralph Glasgal -Artech House, 1977,

"Homa Computer Primer" -Dilithlum Press, PO Box 92. Forest Grove, OR 97116,

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OSP

USA CB SERVICE AT 100 MHz?

Yes, this is under consideration by the FCC in replacement of the possible re-silocation of 220 MHz to the CB service according to a report In QST December 1978.

Page 42 Amsteur Redio March 1979

Operator's Advanced Certificate by qualifying in Section 3 of that certificate

The following publications are suggested for the guidance of candidates preparing for examinations and may be obtained direct from the publishers or

from book stores, except where otherwise indicated

"The Canadian Amsteur Radio Regulations Hand-

"The Canad an Amateur Cartificate Study Guide" -

"The Canadian Ameliaur Advanced Cartificate Study

TRC-25 'Extracts from General Radio Regulations, Part II', obtainable from the

"Radio Act - General Radio Regulations, Parts 1

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and II", obtainable from -

Department of Supply and Services,

"Comment Devenir Amsteur", par -

"The Red-o Amateur's License Manual" -

The American Radio Relay League Inc.,

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"Ham Handbook for Beginners" -ARTA Publishing Co.,

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CONTINUED INTEREST BANGERS (Rist (not lowpass) so that the passband may be positioned snywhere from 200 to 1400 Hz. 3 68 bande dt a continuesty) ad utable from 14 to greater Ihan 2100 Hz (20 dB bandwidth from 140 to 2100 Hz). 2100 Hz)
Autio input and output impedance is sight ohms with one watt output capability
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SCARCITY VALUE OF THE SPECTRUM GST December 1978 contains articles relating to a possible new USA Faderal Communications Act

to replace the 1934 Act. One aspect of the new proposes relates to the possibilities of assessing boence fees on users of the spectrum in two ways (1) the cost of processing the Hoence, and (2) the scarcity value of the spectrum being assigned. said that non-commercial radio services would be exempt from the "scarcity value" provisions of the Loence fee NEW CALL SIGNS

The following call sign saries have been allocated provisions by the ITU according to IARU #1 Newsletter January 1979 - T2A to T2Z Tuvalu, Y2A to Y9Z German Dem. Republic.

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152 Allen Smith VK2A R has sent me a copy of the "Cened on Amateur Rad o Awards Directory"

a a very useful a d to any award hunter and I can sughly recommend if Copies are available from LL, E. S. Walden, Gowanstown Ontario, Canada, for \$3 Australian currency I am Including details of two Canadian awards becewith TRANS-CANADA AWARD

Club Consider DX Asso

Requirements. Work each of the 8 VF call areas with 5 contacts in each area (total of 40 contacts) A so work 5 stations in VO1 and VO2, any combinat on Also work 1 VEO maritime mobile station Of the 5 VE8 contacts one must be in the Yukon Territory and one must be on an offshore Island of the North-west Territories Stations must work and confirm a total of 48 contacts as outlined above to qualify Application Send log data and \$1 to Canadian DX Asan., PO Box 717, Station Q, Toronto,

Onlario, M4T 2N5 CALGARY AMATEUR RADIO ASSN.; STAMPEDE

Requirements Work any ten Calgary, Alberta.

Application No charge Send log data poly to Calgary Amateur Radio Assoc. Box 592. Calgary Alberta, T2F 2J2

Allen Smith VK2AIR of 111 Northcott Road, Seven Hills, N.S.W 2147, has been appointed Secretary-Treasurer-Cusiodian-Editor of CHC Chapter (66) Australia, replacing Jack Gulcher VK3APU Any enquiries should be directed to Allen

THE DARWIN AWARD The Darwin DX Working Group announce the Intro-

duction of "The Darwin Award This award is available to smateur operators and SWLs for contacts with radio stations in the Greater Darwin ares after 1-1-78. Requirements DX stations, work/hear 5 stations

in the Greater area of Darwin. Any band or mode may be used. VK and ZL stations work/hear 8 stations in the Greater Darwin area. Any band or mode may be

VXS stations in Greater Darwin work 20 stations looking for the award or 15 VHF contacts with

Applications for this award to be sent (GCR) to The Awards Manager, PO Box 40986, Casuarina NT 5792, Australia with 5 IRCs to cover cost of This is my last contribution to AR as Federal

Awards Manager I hope that in the last five years I have provided some items of interest to you and that some of you, at least have acquired some wallpaper as a result of the notes.

Your new Federal Awards Manager Verrall VKSWV whose address is 7 Lifes Avenue, Frinders Park, SA 5025 Please forward all correspondence to him

EDITOR'S NOTE. Thank you, Brian, for all of your assistance in the past. We welcome Bill Versall as the new Federal Awards Manager residues.

BOOK REVIEW HOW TO IDENTIFY AND RESOLVE

RADIO-TY INTERFERENCE PROBLEMS (Published by the FCC - available via MAGPUBS)

Good hunting

This booklet is almed at rforming television viewers, broadcast interes radio servicemen and amateur radio and CB operators of the various types of interference encountered by receivers in The first four pages are devoted to showing

selevision viewers what the verious types of nterference look like on their TV acreens The next four pages deal with the elimination of this interference

Audio equipment and telephone interference is then deall with

Pages 10-20 deal with various remedies open to amateur and CB operators who have interference

The last helf of the booklet is an appendix Latang the sources for assistance in resolving Inter-These lerence problems available in the JSA sources are not necessarily available in Austra a Interference to terevision and radio reception a handled in Australia by the Postal and Telecommunications Department whose addresses and telephone numbers are listed in capital city tele-

VICTABO Amateur Radio March 1979 Page 43

phone directories

VHF-UHF AN EXPANDING

WORLD

Eric Jamieson, VK5LP Ferresten, 5233

AMATEUR BAND BEACONS Call Sign Location Freq. HHZPR -- Haitle M0.023 SYSRC - Jamelos 50 025 50,050 WA1ENX - Maine 50.080 TIZNA - Costs Rica WASMHZ - San Diego VEIBIX - New Brucewick 50.084 50 081 WASJRA - Los Angeles 50.092 W7KMA - Oregon 50.098 KOSJIH -- Guem ZK1AA -- Cook Island* EDEDR - Tabili 50 101 KH6EQI — Pearl Herbour 50.104 80.110 HL9WI - Secul 50,110 KG6JEX - Guem 60 110 JD1YAA - Marcus Island 80 110 KH6HK - Marshall Island SB4CY - Cyprus 50.500 B1.000 YJSPV - New Caledonia HL9WI - Secul 52,110 62 200 VK8VF - Derwin VKSRTV - Parth \$2,300 A2.350 VKeRTU — Kalgoorlia VK7RNT - Launceston 52,444 VK4RTL - Townsville 52.450 VK2WI — Sydney. 102AA — FIJI 62.500 ZL2VMM — Palmeraton North† ZL2WHF — Mr. Climiet 52.500 82.510 JAZIGY — Negoya VKBRTW — Albeny 42 500 82.800 VKSVF - Mt. Lofty 83.000 . VKOMA - Mawaon 144 101 VK2WI - Sydney VK4RTT - M1. Mowbullen 144.475 VK1RTA — Canberra 144.600 VK6RTW -- Albany 144 701 VK3RTQ - Vermont 144 800 VKSVF - Mt. Lofty VK7RTX - Ulverations 144,900 VK6RTY - Perth 145.000 145.100 ZL1VHF — Auckland ZL1VHW — Waikato 145,180 ZL2VHF - Wellington ZL2VHP - Palmerston North 145,250 ZLIVHF - Christchurch 145.500 145 400 ZLAVHE - Dunedin 422.400 VK4RBB — Brisbans

432,450 432,475 NOTES:

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and operation from a new boardon near Palman
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VK3RPX — Ballerat VK7RTW — Ulverstone

rformation, Harry

2.12MHF, the new beacon referred to above
There is also a beacon operating on Gibraltar,
agning 282VKF, frequency unknown, and has been
heard as Iar news as PY1 and K25.

SIX METRES
The sporad C E (Es) season has been and gome to a large degree. The season was a resultively short one with some good openings at times, but largely in the certiser part, rather poor around Children's control of the season was a season with the season of th

increased number of long distance openings to Japan and other Pacific areas. As was outlined In last month's notes many areas have been worked from various States of the Commonwealth although H44DX from Guadalcanal seems to have been rather elusive to many operators. A very good opening of some 4 hours to ZL from VK5 occurred on 14-1-79 with ZL1, 2 and 3 mainly being worked between 0800 and 1030Z, with signals to 5 x 4+ The New Zealand contacts followed a rising MUF the day before when very strong FM signals were observed on the PRCIO on 38.3, 38.8, 38.3, 40.25 41.9, 42.5, 43.8, 44.4, 44.7, 47.00. Weaker signals on 48.7 and 49.75 finally culminating in the Erst carrier being noted from Japan on 50.072 at 03282 weakly JASRKC was observed on 50,100 fater at 0428Z al 5 x 2 at this QTH. This again shows how the band can often be open up to 50 MHz and slightly above but not reaching 52 MHz at all So we miss out on contacts!

WGROT reported weak signals on S2 Mits all day on 15-1 from Js. And YJB David VYSSK reported surface conditions on many of the following days, so that the production of the second transport of the s

JAPAH/AMERICA 6 METRE ARRANGEMENTS

From QST "During his Nevember trip to Japan WB6NMI discussed with several prominent and active JA six metre operators the question of frequencies to watch when conditions look favourable for US to JA work. The consensus was that on SSB we should call on 50.110, which is not particularly heavily used in Japan. The JAs will transmit around 50.135. In Jepan, as here, the first 10g kHz is restricted to CW For that mode Louis suggests we call on 50.1 and listen on 50.090. This does not mean QSOs should not take place on a single fraquency, these are merely the aucgested places to monitor for signals from across the Pacific" So now VK stations can all back and listen to the JA/W contacts on 50 MHz during Merch and April, and biting your fingernalis wondering whether you should go down there and invite anybody up to 52 MHz, and be promptly investigated for doing soil

SIX METRES IN TLA

Stan ZL4MB writes to say 6 metres was ratherpoor in ZL4 this year, as in VK. Coolacts doing come easy from his place due to Flagetall Hill, 2000 feet high, and effectively blocks all westerly contacts

Active stations in 22.4 are Gooff ZL4HR, Peiss Z14LY, Bill ZL4GG, Gordon ZL4FO, Kon Zunder, Kon Zun

THE TASMAN EPIC

More news at coming to hand outlining the magnitude of the opening between Australia and New Zeeland trom 7th to 10th January on 2 metres and 70 cm. Jamie VK27CJ must have been bleast yeard after working almost 200 ZLs on FM. Rod VX2SDJ sends a rather comprehensive outline of the happenings, and although the main details were reported last month, a few more points are worthy

CROSSING THE TASMAN

Not clear how far inland the conditions extends are in VV2, only one station in Dise Mountains are seemed to do mech good. Most Signals FM/SSR, to about SS, dod ovitstening at times. Most per control of the condition of the con

Zis seems to prefer odd frequencies for SSB No real calling channel except perhaps 145.21 Seemed to avoid in general torms going much below 145 MHz Most preferred 145.146, some 146-147 700 kHz split a problem, unless you had two rices.

Did not at any time hear the 2t baccon As fee at I know none-heard VK2W either (Postilly a c-vation of baccons too high for type of opening StP) At one stage could key up four Channel 4 repeaters, Including Gold Coast Heard only one VK4 at the time Wieel-end before mass ve investion north/south repeaters in VK2 and VK4 as received in the Wieel-end Stephen Stephen

This as how it want 7-1-76 First contact 1210P/WXAPO 65522 via Z. repeater D WKZAPO was first a mysica 19902Z (Alex en SD cal from ZL to confirm if WXAPO (Epulmah) From 19902Z conditions beller My log 1152Z ZL'11HP via Ch D 2L'11HP 3L'11HP 2L'11HP 2L'11HP 2L'11HP 2L'11HP 2L'11HP 3L'11HP 3L'11H

Modelly were recommended to the control of the cont

1390C. Din again ORT 4002

1904-79 3015 Z. Irapeater B, to 9+ working seasoned VK, Worked Zt.10 Z.19EZ ZLIAAZ 2nd ZLIAC 2 x05 ZLIAC 2 x05

Information for the future 2L repeaters as at

A—146.200 (reput) 145.500 (output), B—146.205 145.325, C—146.300 145.600, D—146.350, 145.650 E—146.400, 145.700, F—146.450, 146.750, G— 146.500, 145.800

Note 700 lists downshift During January openings 8 and D best and most consistent. F heard at times E antenna wrong a de of mast for VK Did not hear A at any time heard rest at some times. F mins 2 watts EPP Simplex 165 000 popular, also 145.65 165 050 146 100. 146 150 and 146.500.

A bistar is feer days later from Rod Wc2000, cublities a few more preventing por 3 and are probe lates a flow more preventing por 3 and are probe as follows: Thursday, 11-178, bend nearly dead. couple worked mid-effection. From gatar 9702. 11-178. On Wednecday 10-1, 2.1 mostly not Gasford repetits and bend fined contracts were to the north of Sydney or Blue Mounts in Charles we want of Sydney or Blue Mounts in Charles we want of Sydney or Blue Mounts in Charles we want of Sydney or Blue Mounts in Charles and an Gold Coast/Erichane in enable. A VKI and a ZL heard heafty with IS on respectable but not worked. 432 MH+

There have been many false rumours about the 1920 NHz contacts I made, so to set the record straight, here are the details for everyone to read Contact was erransed via Ch. 6 Newcestle He (ZL1AAB) heard me first running certier on his hominated frequency, both went to SSB. Contact started 0851Z, concluded 1½ hours later Reports were 5 x 5 at best, Ray copied me better than I copied h m, copy here 90 per cent Q5. Have 10 moutes on lape, rouse free at times.

ZLITAB Land Belcom Liner 70A with MASO1 maximus pre-emp, and a 15 element log periodic van, about 15 watts SSB. The 70A is a 10 MHz : 1 MHz tuneable all mode 432-442 MHz e VK2BQJ used a 432 MHz Microwave device Modules transporter running SV waits to 11 own; 11 WIHDQ sivie yeg a fed with 7/8th such Gu2y cable - a b t belter than FHJS cable at 70 feet

A further sked for 1100Z SSB, heard both wave but signals weaker On 10-11 erranged 144 MHs. SSB aked with ZLZTAL, then QSY to 432 SSB He copied my GW and carrier, but I only heard his carrier breaking at the appointed time. 144 was going down fast and eventually lost lisison.
This attempt started 2130Z. The ZL repeater had at 2000Z so we may have been too late. Lot of QSB. His signal not formally identified

Thanks, Rod, for going to the trouble of outlining events, it was a great occasion for many stations, some will have done better than others, some will be cursing their fuck for not making it for a variety of reasons. Again congratulations you. Rod for making it both ways on 432 MHz SSB. A few Loss included with the VKSROLI latter

A rew these includes with time victors are gives some outline of events from VKA. B-1 0800 to 1200Z 144 VK4/ZL. 10-1. 0700 to 1200Z same. ZL2 worked from Gold Coast, and ZL repealed cooled. Rod VK4ZRQ hed worked five ZL2s allered. Only one ZL1 heard — a marked distinction to VK2 efforts VK4 also heard a ZL3 ZL2ARW working from a mountain top had an enormous signal on SSB in Brisbane, but he had left his 432 gear home! (See "News from Queensland" at and .-

Lignel VK3NM was rather a fortunate traveller, arriving in Newcastle during the big two metre opening, and prompty got amongst the ZLs him-self. He used a TR7400A and a 5/8 whip to work set He used a THY-HOUR and a 275 wint to work direct ZL28FJ, ZL27VY, ZL1TWA, ZL1AZB, ZL1UD, ZL1TLQ, ZL28AF, ZL18EX and ZL1TUX. Vin re-peaters he worked ZL28JO and ZL1HF No ZL3 or ZL4 heard. Signals from most of the attrions were incredibly strong Llonel reports, planing the S meter at times Stations running 10 watts or lower to ample 14 wave whips were 59 with little or no CSB. So you can be lucky sometimes, Llonel, being in the right spot at the right time? Thanks for writing.

To finish up the news on this big perhaps it is ironical to read in the VHF notes a "Break-in", the New Zealand counterpart of AR in the December 1976 Issue, a recort of the Chr sichurch Branch 05 s VMF Group which con a dered proposals to change from the present 700 kHz olisat n NZ to 600 kHz, which would be compatible with VK, but a clear vote against the pronosel was certied I wonder if there will be any further discussion on the matter in view of what has just happened I wonder how many contacts were edually not made as a result of many shacks not having additional equipment with which to accommodate the different offsats of the VK and Z_b repeaters Probably some never made it at all despite hearing one aide of the conversations?

I see by the VK6 VHF Group Bulletin that discuss on was to be undertaken on the possibility of regotiating operation on 50 to 52 MHz. As good a thought as this might be, I still believe a fragmented approach by various groups to P. and T will get nowhers. The matter needs to be initialed at WIA level via the VHF Advisory Committee whom we would believe would be working towards this and (They most certainly are -- Ed.)

It is my earnest hope P and T will not drag their feet to the extent that ultimate permission may be granted for some form of operation on 50 MHz at a time when it is too late for any worthwhile contacts to be made There still seems to be really no worthwhile reason why 50 MHz opera-tion cannol be permitted on a non-interference basis - that situation exists already on 52 MHz you try to continue to operate at present on 52 MHz whilst interfering with your neighbours and see how far you will not whether your aminment is blameless helps very little when the

Initially there seems no mason why we cannot be allowed to go down to 50 MHz area and call overseas station, and invite him to move up to 52 MHz. If he cannot do this then a short QSO should be nermitted with an OVERSEAS station on 50 MHz. There are plenty of areas outside Channel I territory which will not interfere with television viewers, and those in Channel 9 territory would probably continue to operate on the limited scale they do at present but at least would be permitted to have OSOs outside television hours, and It. late pight contacts will be part of the TEP situation as the peak of the present cycle approaches. Such an errangement could well settles for the sine halos whilet the total implications are studied by P and T and others. It will keep all contacts fully legal whilst peritting VK stations to participate in the world wide contacts which will probably be available in the naar futura

THE PACIO RECEIVER The paragraph I ran recently on the ex-Army 38 to 55 MHz transceiver type PRCID has caused quite a degree of interest, if the number of interstate phone calls I have received for further information is any indication. Those purchasing such an instrument to monitor the MILE may be interested in the socket connections for feeding power into the unit. The 8 pin socket at the bottom of the unit unit The B pin socket at the bottom of the unit are connected as follows: A and B 1.5+ volts; C is earth, D 135+ volts, E 67.5+ volts; F not connected; H —6 volts, J is A—, B— and C+ which are connected to earth, but A— should be isolated in your power supply for switching pur-posa. 135 volts is used for the transmitter and requires 27 mA. 67.5 volts is used for the transmitter also at 12 mA and for the receiver at 26 mA This voltage is critical for the receiver, anything below 87 volts and the receiver performance falls off rapidly. 87 to 75 volts would be ideal, 1.5 on replay, or in 75 volts would be toes. 1.3 volts at 0.48 amps for the filements. This is dropped to 1.25 volts internally for the Staments. This voltage also supplies the diel light and the cell-brator The -5 volts at 300 mA is used for the transmitter valve filament and the squeich Well filtered DC is required for 67.5 volts for the receiver and 135 volts for the transmitter, and exceptionally well filtered and/or regulated 1.5 volts for the Sigments. A PMG type cell could sossibly suffice here if you are only going to possibly summes here if you are only going to receive. The unit is a wide band FM device and readily resolves the television audio; transmitter output power 800 mW, audio output power about 30 mW. To raise the fevel of the surfic I extracted the two leads which connect to the headphone and connected these to the audio end of a cheep \$4 AM translator radio from K-Mart, and this gives ample output for listening. The antenna es, men-tioned previously, is a Hills TL3/01 which is a colour TV antenna for use in Channel 0 areas. Fed with ET10M 75 ohm cosx it provides probably 4 to 5 dB of gain over the frequencies covered in the unit, and in my case this entenna can be rotated and is about 58 feet high.

The PRC10A is a later version of the PRC10 but is a little different inside, it appears to have one less IF stage and a few other changes, but I see no reason why it should monitoring receiver as well. The PRC10 is ter for monitoring, I have extremely strong signals here from the local TV stations but no sinns of any rubbish between 38 and 55 MHz. Every signal heard on the PRCIO comes from somewhere else, mainly There is also a PRC9 which cove from about 27 to 38 MHz, but is not so suitable for our present use, but would be a useful adjunct to

Ian VKSIK at Eudunda, some 70 miles NNE of Adelaide, seems to enjoy another set of reception conditions which seems to slude those living further south. He reports in another letter this month the reception of various FM repeaters any month the reception of various FM repeaters and some simplex operation, e.g. 5-1-73, 1230Z Channel 4 Bendigo, Channel 8 Millotra both sudible, with Channel 7 Mt. William very strong. 8-1 1448Z Channel 3 Ballarat. 2252Z Channel 3 feir, Channel 4 Bendigo and Channel 6 strong VK3BM S9 - on direct path. Channel 8 3MRA strong 9-1 13122 cirect pani. Criamine o anno strong, 9-1 13122 Channels 3, 4 and 7 audible increasing to 9+ lase evening and early morning 13-1 Chennel 7 3RWZ audible 14-1 Channel 4 and Channel 7 audible 15-1 10132 Channel 3 2RWG Wages 9+ for most of morning, Channel 7 3RWZ 9+, 7 1RGI S8 This letter reception apparently was not following the usual set of conditions, as the south repeaters were not being tayoured, as 3RWZ some inputs and squals fransmilled Channel S SRNE and SRMA also pond strength. 2335Z VK2ZI in Broken Hill worked on Channel 40 and he was able to access Channel 5 Adelaids.

With this sort of capability, Ian, we hope you will in time be able to all up some rierest in the country on SSR on 144 MHz. Sultably equipped ons in the areas mentioned should be able to make contact from time to time

SME SERORT

"The Propagator" reports for December 1978 that "The Propagator" reports for December 1978 that a meeting of the University of Wolongong slat's attended by Lyle VK2ALU, affirmed that the 432 MRz dish at Daoto should be shifled to the new Mitz dish at Dapto should be shilled to the new site ill costs are satisfactory. A secure building would be erected next to the dish by the Uni-versity, and the EME Group would only have to install the EME equipment and associated whing and cebies. So it looks as though in due course the project will once again be operational we hope secure from the stup dily of wandellam

THE PERSON NAMED IN COLUMN 1 Rod VK42RO has written with news of VHF hannen-

ings on behalf of the Brisbane VHF Group As far as 6 matres is concerned, it has not

been particularly outstanding, especially as far as multi-hop Es. F or TEP are concerned Dute a bit YJS, FKS and VKS activity One Interesting obser-vation is that a noe the YJSPV beacon has been testaling it would seem the Brishnes Bost Vile with more reliable than the Brisbane-Melbourne-Launceston-Adels de paths FK8AB and FK8AX reworking JA and KHB and hearing KRB, UK. UM, LZZ (week CW) all on 50 MHz, which makes one wonder what could be done if TVO-0 d do? So far one JA opening for 1979 at 2300Z on

7-1, which looks as though it could be F2 rather than class 1 TEP

On 2 metres tropo has been fairly prevalent during January Areas concerned extend from New-castle porth to Rockhampton and west to Mores Country stations particularly active include VK2BXT Kingscilfi VK2ZXC New-Moree, VK2PU Kingsciif VK22CV Port Mecquerie, Newcestle VK4RH near Werwick, VK4LE Springsure, VK4ZBI WARM hear manners, vivile opinigavis, viviles of Robyvele and VK4ZWH at Bundaberg, plus of course many Brisbane and Gold Coast stations. Notable contacts include VK4RH to VK4FU, VK4LE nd VK4ZBI VX2BXT to VK4ZWH, and heard by VK4ZB1 VK2ZCV to Brisbane

Zt. stations have also been worked from area recently, with ZL 2 matre bascons being heard from time to time Most sventus contacts were made on 9-1 and 10-1, with ZL2 see being the most prominent, but ZL1 was also worked and ZL3 heard. The sciual number of contacts made from SE Queensland do not appear to be nearly as many as from Sydney area and signals appeared to be generally rejective. Sixt one close to the cost and further south had stronger signals. The other interesting point is that original polarization of the signs a was maintained. Some new DX records from Queensland have been created e.g. VK4VC Nam-bour to ZL and VK2PL Kingscliff to ZL, both on metres As the sciual locations of the various Z metres. As me across locations of distances at this stage are not possible, but it is fairly obvious existing records have been broken Despite. many calls nothing was heard on 432 MHz. Thanks, foot, for writing.

GENERAL The usual January openings on 144 and 432 MHz have been taking place between Albany and VKS, with some very strong signals at times. Two metres also been good into VK3, especially the northern parts, Col VKSRO has been having con-atent contacts with Frank VK2ZI in Broken Hill.

Letters are continuing to come in response to the two part article in AR on the return of the six metre band to amatours. Whilst most consolidate the thoughts already expressed, it is pleasing to know the article hasn't gone unnoticed. letters are filed for the future

As there is not a lot of specific information this month, and we have had some good coverages of recent times, it seems appropriate to close at this point, wishing you all plenty of DX for the equinoxial period of March and April

Thought for the morth "it is impossible to defeat an Ignorent man in argument" 73. The Voice in the Hills.

YOU AND DX

Mike Bazley VK8HD **A James Road** Kalamunda W.A. 5075

The "art" of DX is a declining one Like every-It no n the 'Modern World". DX has to be retent. The emphasis seems to be on power flook at the advertisements in this Journal, those big finears must be selling) and the subscription to a DX Bulletin that tells you if you are on such and such a day on such and such a frequency liber AB 12 ZZ will be waiting for you

Once upon a time you had to hear them to work them! This is now not necessarily trust if you do not agree with this stalement then I suggest you to some of the DX nets (not all) and of the DX operations control ad by an MC. In these cases first the "DXer s" call is put across Iness cases trial to and then he is seked "did he get his 5 and 8 reportiti?" All he has to say is yes and send the QSL with the nacessary "green stamp"

Perhaps the above view is being a little bit cynical This writer can never understand why someone will pay \$1000 plus for an amplifier, when with a little bit of patience and know-how a very efficient radiating system can be made at a fraction of that price, with the added advantage of being able to hear the DXII

JANUARY DY Stations mentioned below as being heard were all

heard or worked from VK during the month of January Guy, told the writer that he would be

on Transan, FRZL/T, from the 2-2-79 to 4-4-79. Guy hopes to be active on both 15 and 20 CW and SSB. If you need Tromlein it might be worth checking the French net that is regularly active around 14110 kHz at approximately 1100-1200 GMT 4U1JN is active usually one day (a week day)

week on 15 metres either around 21029 or 21270 to 21300 between 2200 to 2400 GMT. D.d you work Tu9CC? Sorry to tell you he is Central African Slim, operating from around JA.

He has also been heard to sign TTS and TNB. HS1ABD. Fred Laun, has been active listely dishing out the 58 WAZ QSOs. He has been heard on all bands and for those who need Zone 25 on 80 metres he is requierly on 3515/16 at about 1200 GMT onwards. At the present time there is a large number of

W slations active signing portable SU For example WDSAJE/SU has been heard on all bands from 80 to 10m STORY operator Hans, is still active from Scuthern Sudan and has been heard with good signals around 28600 at 1000 GMT QSL via

TF3CW is trying to get his 5B WAZ He is looking for Zones 29 and 30 on CW all bands. Happy to make skeds. Has been worked on 15 metros

HERE PAGE THE RESIDENCE VOT HEAVY

Bandwidth

Mills

Further to the many enquiries received concerning the Group's range of YAGI antennae, this article lists full details of the range and prices. All orders from the Brisbane Motro area will be supplied pre-assembled. while those from other areas will be supplied dissembled, FOB rail. To order any of the above antennee please write to The Brisbane VHF Group, PO Box 911, Fortitude

Valley 4006, staling (1) centre frequency for frequency for crossed versions) and (2) the number of elements Boom fongth

2m/5	4	17	9.2	20	32
2m/7	3	3.1	10.7	25	40
2m/12	2	4.6	12.2	32	- 65
70cm/6	8	0.0	10.2	15	27
70cm/12	8	1.0	12.2	25	45
70cm/15	4	3.0	14.2	30	82
In addition to the	above range, a nu	mber of combination	antennae can be	ordered For example	-
2m/5 and 70cm/12	1	3.7	1	1	1 40
2m/7 and 70cm/15	1	3.1			47

-From "QTC" February 1979 (VK4 AR Insert).

Galn

(dBd)

What has happened to the Bouvet DXpedition? Lots of stations have been heard calling them, a few working them, but this writer has not heard of any QSOs with the genuine article by a VK station. Yee, this one has been pirated extensively on CW and It is believed that up to January 24th there had been no GW activity Rumour also has it that the operators have not been able to be very active because of their heavy work load. (It is supposed to be a scientific expedition(15)

Do you get confused with these USA calls that start with AE, AG, AH, KB, or Guam stations that either sign KGS or KH27 You do? Well Join the club Seriously, it anyone has a complete list of pratities and the countries they represent could It be forwarded to me and we will get it printed in the column. Thanks

S BAND WAZ

Those chasing the new five band WAZ should note that UA0YT is very active on 10 and 15 CW worked on 15 at 1200Z) and is happy to move up SSB on request Viad uses 75 walts to a Ground Plans

If you were fooking for the Laccadives (VU4ABC) January, this DXpedition did not take place due to problems in getting authorization to operate from the Islands. Rumour has It that these problems may be overcome in February or March Watch — CW 7010, 14050, 21050, 28050 kHz, SSB 7090, 14250, 21250, 28600 kHz

NOTES FROM THE WEST COAST DX BULLETIN D4CBS should be active from S9, SAO THOME from approximately March 1 HB9TL will be active

from the Maldives for one week-end only, either 2/4, 10/11 or 17/18, CW on 14020, 21020, 18020 and SSB on 14195, 21295, 28595 kHz This writer does not believe that a list of exotic

call signs worked is of much value to the reader It contains information that details operating habits of a particular station. To compile such a list will involve the co-operation of readers. If you feel that It is of value to you please lot me know. For example under the heading of 150 metres G3IGW, 25, 1930, 2 would indicate that G3IGW was worked on 1825 at 1930Z from NSW Well that's it for this month, remember

ments good, bad or Indifferent are welcomed. This is your column, If you want it to be. OTHE YOU MAY HAVE MISSED VS6FF - Box 541, Hong Kong VR1AE - Box 239, Tarawa. VRIAY - Box 431. Tarawa W7JRL/SU - Via the WZ Buresu TA1ZZ Via K48C SUIER Via YU10FY. SUIER - Via YU10FY WDSAJE/SU - Via NSRM

K7CA/HC1 - Paris 1107 Quito.

801FG operative hopefully 10th February March CW 14025 14051 SSB 14205 14282 Mrz. YVIAA Aves Island 7th to 14th April usual DX

MAGAZINE

Syd Clark, VK3ASC

HAM RADIO September 1978

Efficient Broadband Balun: 20 Metre Delta Loon Array, T-Network Impedance Matching to Cosx, al Feedlines; 75-Ohm CATV Caple for Amateur In-staliations; Matching 75-Ohm CATV Hardline to 50 Ohm Systems, RTTY Modulator-Demodulator; Integrated Circuit Arrays. Tracking Down Repeater Jammers, High Performance RF-AGC Amplifier Modified Guad Anterna, Phased Looked Loop FM Demodulator, Calibrating Meter Amphiliars. Digital Keyboard Entry System

Price

000

Price (\$)

INDEX

OST November 1978

A Baseband Communications System, Pt. 1: Frequency Measuring Tests Using a Product Datactor SSB Receiver; The Two-Tone Tester Shoes Size 220 A, B or C; A Logic Circuit for Phasing the Telefax, Calculating Component Values, The Aerial Performers of the Radio Circuits, QRM and QRN; You've Heard It; Now You Can See It UTC Right Time, Results Field Day 1978, June VHF OSO Perty: Rules ARRL 10m Contest and 180m Contest

RADIO COMMUNICATION November 1978 The Microwave Associates Gunnplexer 10 GHz

Transceiver Front-End, M.crowava Modules 1,299
MHz Converier, Radio Communications and Tie ITU, Sporedic-E Observations in 1978. 73 September 1878

Four-Wheel Frenzy, T-R Exotics The Autodial e-Revisited Waterpais Spec s . Be Legal, Another IC-22S Scheme, Improving the SWTOC DI Graduate to a Better Operating Dask The SWL Bible The Mobile Dream Machine, Be a Surplus Survivor Tracking the Wild Turkey, High Q Antennas, When In Doubl, Improvise, Relief for the Rockbound Power Supply Megic, DVM Scrapbook Meet Mr Blizzard, The Blizzard of 78, How Do You Use ICe, Relax and Lowing Nuclear Attack Computerized QSO Pecords, RAM Checkouts a Snap. The Case of the Missing Offset, What Do You Do with a Cube Timekube, Gournel Guide to Capacitors, The ARC Turer, Home-Brew Circuit Soards 73 Reveals Biss, CB to 10, Kerchunk Kaboom Be Mr Clean, Build the Triple Threat Keyer The Ten Metre AM Antenna Specia Buddy, Ya Got a len Meltre Am Antenna special 800cy, re doi a Malch, Another Trick for the 225 Slop Timeouts Revist and Malentain Control, CB to 10 Active Voltage Divider, Charge, Light 8 gh, M coder Magic Beild the IC Experimenter, A New Type 10 GHz Receiver; Two Metres at the Summit

osp

SSTV

John VKZXY (ex YFX and NAR) has been talking regularly to Tom Christian VR6TC on Pilcaro Island Tom is now very interested in SSTV and hopes to be on air in Plat mode in the near future He makes regular visits to the Novice aubband on 15 metres



MML 144/100 Wott Linear Power Amplifier

- 80 watts minimum RMS output 100 watts RMS typical.
- Fully protected against poor load VSWR overheating and excessive or reverse supply rails
- Equipped with RF VOX and manual overr de-
- Frequency handwidth 144 -- 148 MHz at -- 0.5 dB 10 watts nominal for 80 watts output.
- PRICE AMATEUR NETT: \$265 OD

100 Watt 432 MHz Linear Power Amplifier

- 100 watts m n.mum output 10 dB minimum nain
- Fully protected against poor load VSWR, overheating and excessive or reverse rail.
- Enumped with RF VOX and manual override
 - Frequency Bandwidth 435 MHz 15 MHz @ 1dB.
 - 10 watts nominal input for 100 watts output.

PRICE AMATEUR NETT \$395.00

Transverter Madel MMT 432/144'S

LITTLE IZ.NG on IF of 144MHz * 10 WATTS DRIVE of WWATT * VOX OPERATED TWO SELECTABLE BANGES 432 - 434/434 - 436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8

FEATURES High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode serial changeover relay with less than 0 2 dB through loss " extremely low noise receiver converter, typical 3 dB " Separate receive converter output gives independent receiver facility. Built-in Automatic RF VOX with override facility. Built-in 10 watt 144 MHz termination, selectable attenuator for % watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts MODEL MMT 432/144 'S' Price Amateur Nett: \$295



Transverter Model MMT 432/28'S' FEATURES EXTENDED COVERAGE FOR OSCAR 8

Second Crystal Oscillator gives two ranges. Low 432 - 434 MHz - High 434 - 436 MHz programming available to either Transmit/receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer, Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp peak * Case size 187 x 120 x 53 cm * Spare 432 input spoket. MODEL MMT 432/28 'S' Price Amateur Nett: \$245 MODEL MMT 144/28 Price Amateur Nett: \$185

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS. Al, modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors, Input and output impedance is 50 onms. Completely professional technology, manufacture, and alternment. Extremely suitable for operation via sattelite or for normal VHF/UHF communications

10 METRE MOSFET CONVERTER: Input frequency range 28 - 30 MHz * IF output frequency 144 - 146 MHz * Overall gain 15 dB min ** Overal nose-feet of the section o

frequency 20-30 MHz. Typical gain 30 dB. Noise figure 2.5 dB. Typical image rejection 65 dB. Crystal Oscillator frequency 24 MHz. Power requirements 12 volt ± 25% at 35 mA, MODEL MMC52/28LO PRICE AMATEUR NETT \$49.00 2 METER MOSFET CONVERTER No-se figure typ, 2.8 dB Overall gain typ, 30 dB IF 28 30 MHz, 9.15 V 20 mA

PRICE AMAYEUR NETT. \$45 00

DUAL RANGE 432 434 MHz & 434 - 436 MHz Converter. Type MMC 432/28 'S' 8 MMC 432/144 'S' Input frequency ranges 432-434 MHz (now), 434-436 Mhz (high) I.F. output frequency 28-30 Mhz or 144/146 Mhz. Typical gain 30 dB. Noisef gure 3 dB maximum, D.C. Prover requirements 11 13.3 volts, 12.5V normal Current consumption 50 mR maximum PRICE AMATEUR NETT \$67.00 1296 MR. CONTROL C

VARACTOR TRIPLER 432/1296. Max. input at 432 MHz. 24 W [FM,CW] - 12 W [AM] Max, output at 1296 MHz. 14 W. ODICE AMATEUR NETT \$24.60

500 MHz COUNTER Model MMD050/500 PRICE AMATEUR NETT \$175.00

BNC CONNECTORS - Excellent quality, fully imported from U.K. U.S. Mil, No. UG88E/U, PRICE AMATEUR NETT. \$1.35 each.

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SOME NEW YEAR SPECIALS FROM BAIL ELECTRONIC SERVICES

Please note that some items are in limited quantity, so-don't delay, they won't last forever!

FT-101E AC-DC HF Transceiver \$795 FT-101E AC HF Transceiver \$745 101E DC-DC Conv. Kit

NB Our 101E Transceivers still include the superb "B" Model adjustable Noise Blanker PB 1292, exclusive to us! The NB, that really does work. And for those with the PB 1582 N.B. we can supply the 1292 at \$42, plus postage \$1.50

FT-101 W/S Maintenance Manuals \$27 plus P.P.	\$2.00	70 T.V. Transverter 430 MHz (two only) \$299
FT-7 HF Transceiver \$389 (Yes, fair dir	nkum!)	Base adaptor , \$23
FT-227R 2m FM Digital	\$339	Also available Rubber ant, optional hand mic, mobile
FL-2100B linear	\$579	adaptor, Nicad batteries.
YC-7B Dig adaptor for FT-7B	\$125	ROTATORS:
FRG-7 Receiver	\$349	103 LBX \$165, 502 CXX \$255, 1103 MXX \$410, 201 AXX \$179.
Battery holder for FRG-7	\$10	1102 MXX \$379.
LFC-2A Selective SSB filter for FRG-7	\$20	
YC-500S Counter 500 MHz	\$499	MAST CLAMPS:
YC-500E Counter 500 MHz	\$656	For 103 \$18, 502 \$29.50, 1102 and 1103 \$45.
YP-150 Dummy load/power meter	\$112	L.P. FILTERS:
SP-101B Ext. speaker for 101E	\$49	LP-7 \$8.50, TV-42 \$15, TV-476 \$10, FF-501DX \$39.
CW filters for FT-101	\$59	21 -1 4004 11 -12 414 11 -17 414 11 -17 414
FT-301 series CW AM. RF Proc filters each	\$45	ANTENNAS:
FRG-7000 Dig Receiver	\$645	TH6DXX \$295, TH3JR \$196, Hy-Quad \$237, VS-33 \$259, DX-33
QTR-24 World Clack	\$35	\$235, DX-32 \$145, DX-34 \$265, VS-22 \$179, VS-20CL \$165,
YH-55 Yaesu Headphones, 8 ohm	\$19	VS-11CM \$89, VS-41/80KR \$119, VS-RG \$29, 18V \$40, TD-1 \$68. (Note: The Hidaka "VS" beams inc balun)
YD-844 and YD-148 dual impedance desk mics., 600 ohm/		•
50K ohms	ANU	Hy-Gain BN-86 balun \$28
SUK ONTIN	****	Lighting Arrestors \$4.95

YO-301 Monitorscope, three only RS Series Yaesu HF Gutter mount mobile Antennas -RSM2 base, Inc. RSE2A stub mast, with Co-ax cable ANT, COUPLERS:

\$29,90 Resonators - RSL-3 5 \$22, RSL-7 \$21, RSL-14 \$20, RSL-21 \$19. RSL-28 \$19, RSL-145 (5/8 2m) \$24.

6JS6C P A Valve FT-101 SITE Other Yaesu va ves also available

SRC-146A Standard (Japan) 2m hand-held 5 chan 2W FM transceiver built-in mic , spkr., "S" meler, inc. 2100 carrying base and crystals, to clear

er 430 MHz (two only)

HC-75 \$65, HC-250 \$89, HC-500A \$119, HC-2500 \$199,

Yaesu Couplers also slocked

SWR METERS RS-101 \$7.50, SWR-40 \$15, SWR-200 dual \$75, FSJ-5 dual \$29.

MORSE KEYS:

HK-708 \$14.99, HK-706 \$25, HK-808 \$85, Morse osc. EKM-LA \$13.90. Practice set TC-701 \$19.50.

The above list is not complete. There are many more items available. Contact us for your requirements Above prices (R.R.) no S.T. Freight is extra. Prices and specs, subject to change, 90 day warranty on sets, excluding power valves and power transistors. Full service facilities and comprehensive range of spares A items new, ex stock except FT-7 and FT-227, which are due into store approx mid-February



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Model HK-808. Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key Price \$85.00.

Model HK-710. Heavy Outy De Luxe Hand Key, fully adjustable, bail bearing shaft, plastic protective cover. Mounted on heavy non-skid po y marble base Base dimensions 168 mm x 103 mm Price \$45.00

Model HK-707. Economy hand key in all black ABS resin, meta: parts protected by moulded ABS resin over \$19.30 Model HK-708. Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob Price \$14.98

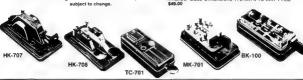
Prices incl. ST/Freight and Ins. extra/Prices and specifications

Model TC-701. Morse practice oscillator with built in key and speaker Including battery and earphone Copy of morse code on case Two can be wired together to form a practice communication set Price \$18.50

Model MK-701. Manipulator (side swiper) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of

the main base \$19.00

Model BK-100. Serin-automatic (bug) key with standard adjustments, wide speed range protective plastic cover, on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75 mm Price.





a decade of research in HF transceivers brings you the FT-101Z series ... at \$799 basic price it's a steal!!

Today's technology, backed by a proud tradition, is yours to enjoy in the all-new FT-1012D high-performance HF transceiver from YAESU and BAIL. A host of new features are teamed with the FT-101 therstage to bring top dollar value.



Roor includes variable IF bandw dth with two Spole crystal filters and a high ye frective all-new NB circuit with front panel clanking level control. Also included are 10 and 20 db attenuations and offset funning for transmit and receive many level of the state of the state of the transpired programs and the state of the range feedback. AR IF speech processor is built Available options include IC-DC converter, cooling fan, dig display/counter unit (for FT - 1012.), hand or desk mic., and CW filter CW histomay be useful in a part of the CP of the may be useful in a part of the properties of the and of the control of the prophyration of the properties of properties propertin properties properties properties properties properties pr

Photo shows FT-101ZD transceiver with Digital display FT-101Z Analog Mode (without digital display) available at \$799 and you add the optional extras if desired. (Accepts 901 series accile graphics and your property and topic responses transverter, and topic reto.)

Prices quoted are recommended retail and include 90-day warranty except power valves and semi-conductors. As the authorsad Yaesu agent and factory representative since 1963, we provide complete after sales service and spares.

JAS7879-38



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WAREHOUSE 78 CHAPMAN PDE., FAULCONBRIDGE TELEPHONE (047) 51-1394 A.H. (047) 54-1392

Only three months ago in our December 1978 adventisement we gave a bouquet which has all too quickly willide and faded KSPMOOD AUSTRALIA has meanwhale raised their proces to the livel of or abone the equivalent relial proces in JASPM at the present 1 February 1979 YEN Dottar exchange rate Replacement cost of our stock of TS-50-5 and TS-60-5 intercenters; and whether than the selling them for Talking about begans?

Further AUDIO TELEX, the local branch of TELEX INC III S.A. who last year took own VIY-QUIN ELECTRONCS CORP is now offening My-Glarn antennas to dealest as thipper prices than use are saling libers for Again, talong about beginn of the have no screets and don't sell at a loss but of course this cannot last. We are actually gentilling on improvement of the VEN Dollar exchange rate for future KENWOOD supplies.

THE-DXX 10-15-20M senior 6 el. Yagi 24 boom. TH3-MK3 (10-15-20M senior 3 el Yagi 14 boom. TH3-MK3 (10-15-20M senior 3 el. Yagi 12' boom. 20-BA 20M 4 el. Tiger Array 26' boom. HY-QUAD 10-15-20M full size Cubical Quad 20.5 el Yagi with balun 63' boom. 20.8 el Yagi with balun 12'6' boom. 20.4 el Yagi with balun 12'6' boom. 20.4 el Yagi with balun 12'6' boom. 20.5 el Yagi with balun 15'6' boom. 20.5 el Yagi with balun 15'6' boom.	\$240 \$175 .\$230 \$260 . \$25 . \$30 . \$40 \$20
ANTENNAS SUITABLE FOR 10M: 11M 5 el 79gu 17' boom 11M GP with 3 radials CLR-2 11M % wave vertical w/3 radials 19'10''. CLR 11M % wave vertical w/4 radials 22'9½''	. \$70 . \$20 . \$40 . \$50
ACCESSORIES & COAX CONNECTORS: SWR-50A Twin meter 3.5-150MHz 1KW SWR/Pwr meter Bumper Mount with %" 24 thread	. \$26
Gutter Mount with %" 24 thread antenna mount 5M length RG-58U with PL-259 one end	\$4.50 \$3
MMING DOUGH MOUNT GLP Right angle RG-58U to SO-239 Wlock nut & weatherproof cap MLS Right angle RG-58U to PL-259 PL-259 standard & solderless, RG-8U & RG-58U Finine spice RG-8U & RG-58U SO-239 chassis connector 2 & 4 hole mounting Right angles & T-connectors	. 75c . 75c . 75c
Double female connectors Mic. sockets, chassis & in-line, 3 & 4 pin a circuit microphone jacks Crystals for QUARTZ-16 2M transceiver. Channel 51 T/R 146 55 — pair	. 80c . 85c
ROTATORS & CABLES: KEN KR-400 rotator with 28V AC control box	\$125
CDR HAM III rotator with 28V AC control box No. 14 hard drawn copper wire — per meter 4" H.D. foam coax extra low loss — per foot Type RG-8U foam coax cable — per yard 1ype RG-58U coax cable — per yard 8 core rotator cable — per yard	10c \$1 . 80c . 30c

HY-GAIN ANTENNAS:

WILLIAM DOCUMEN
KENWOOD PRODUCTS:
TS-520S 10-160M SSB/CW transceiver 240V AC . \$700
TS-820S 10-160M SSB/CW w/Digital readout\$1100 TL-922 10-160M Linear Amplifier\$1200
TS-700SP 2M all-mode transceiver\$850
TR-7400A 2M transceiver
TR-7500 2M transceiver
DG-5 Digital display for TS-520S
TV-506 6M transverter
TV-502 2M transverter
AT-200 Antenna matchbox
DS-1A DC-DC converter
DK-520 adaptor for DG-5 to TS-520 use \$20
LF-30A low pass anti-TVI filter
VFO-820 external VFO for TS-820S
VFO-520S external VFO for TS-520S
SP-820 external speaker for TS-820S \$60
SP-520 external speaker for TS-520S
YG-88C CW filter for TS-820S
YG-3395C CW filter for TS-520S
MC-10 hand held microphone\$20
MC-50 desk microphone \$45
HC-2 Ham clock \$35
BS-5 (TS-520S) & BS-8 (TS-820S) pan adaptors
for SM-220\$65
TS-120V 12V DC mobile transceiver with
NB, VOX, IF Shift & digital readout, 30W PEP\$600
MOVICE SPECIALS: Still available at these low prices

NOVICE SPECIALS: Still available at these low price Transceivers for 10M coverage, AM/USB, 15W PEP:

(a) SIDEBAND SE-502 240V AC/12V DC w/inbuilt SWR/RF meter 28.3-28.6 MHz\$150

(b) UNIVERSE 224M 12V DC 24 ch. 28.480-28 595 in 5 KHz steps Clarifier operates

SSB/AM units⁻
Sets of 8 crystals converts to 28.480-28.595MHz . . \$40

SUNDRIES:

FRG-7 .5-30MHz General coverage receiver. \$350 FT-7 10-80M 12V DC transceiver \$475 ICOM IC-202 2M SSB portable transceiver \$175

WICEN

Ron Henderson VK1RH Enderel WICEM Co-ordinator 53 Hanneford St., Page ACT 2614 Ph. (062) 54 2059, A.H.

In a recent leave in this column I included the outline of a WICEN training course and one of the topics was formal message writing This was the topics was formal measage willing. This was notisided because WICEN operators need to be able to do it to exist and guide their clients, the SES, the police or other emergency official. This month i am including a reproduction of a message form with a text to guide the reader in its compilation. In a later Issue I will describe how to send the formal message by radio

The pre-printed message form is not essential, but it is a very valuable quide to make sure you do not forget some important place of information.

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INTERNATIONAL

NEWS

What is the standing of amateur radio internationally? Here is the text of an address by Mr AL Mill, the Secretary-General of the ITU to the IARU's Region 28th "Henrial conference held in Panama 8th September, 1978. The report is reprinted from IARU Region 2 News of November. 1078

"May I begin by offering, on behalf of the International Telecommunication Union, my warmest congratulations and aincerest wishes for a prosperous future to the International Amsteur Red o Union which is celebrating its fifty-third ann versary this year

You can now look back on more than fifty years of intense activity which, through disinterested research and sound scient file studies embracing the entire radio frequency spectrum, has made an appreciable contribution to the progress of radio communication

This half-century of international co-operation has forged a chain of human brotherhood between all those who, by inclinet on or through ded cation. have devoted or are devoting the greater part of their felsure time to seeking human contact over continents and sees, and beyond differences of language, nationality, religion and politics systems.

The millions of chance contacts which have occurred during this period have been natrumental In saving many lives, thus making the international Amaleur Radio Union one of the most useful and dynamic prescipations when I comes to be plut to save Ind vidual lives or the lives of many in natura disasters and catastrophes

You will therefore, readily understand, Mr Chairmen, how much I as Secretary-General of the ITII appreciate the pleasure and honour of laking part with you today in this closing meeting of your triennial Conference Ladies and Gentlemen

It is hardly necessary to remind you that the amajeur service is one of the oldest radio services. for there have been radio amateurs since the very beginnings of radio in 1925, smalleur radio was organized as a service in connection with the first regular sound programme broadcasts, at a time when the use of rad o links for the Maritime Mobile Service was a ready widespread

Thus considering the very special place which the smatteur service enjoys in the general body of radio services recognized by the ITU the pressure I feel at being among you is perfectly under-

Your smatter service is defined in the Radio Regulations as 's service of self-iraining, inter-communication and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio techniques solely with a personal aim and without pecun ary Interest

This service is, hence, recognized as having Iwo lotty missions

First, to instruct, that is to say to take part in the training of those who, in any capacity bear Second, to engage in disinterested research, in order to deepen our knowledge of such malters as

the mechan sma of wave propagation It is therefore with the greatest satisfact on that we acknowledge the fact - and a most important fact - that radio smaleurs have followed very closely the various developments brought about by the use of every higher frequencies or by new techniques, such as space communications Several thousand ameteur radio enthusiasts have a ready made use of sale lites (in particular, OSCAR 6 and OSCAR 7) and their observations will undoubtedly

help to enhance our knowledge of the phenomers I will mention briefly, since it is well known (I uld even say it is perhaps the aspect best known

involved

to the general public), the part played by radio emateurs in emergency communications, especially in the event of natural diseases or catestrophes the use of high frequencies in this sphere is so much a matter of common knowledge that there is no need to dwell upon it

But the role of ameteurs in technical training seems to be little known for all its great importance As you may be aware, the FTU is encoded on a year programme of technical co-operation ad developing countries to expand their tele-communications in this programme training plays a predominant role. There is no doubt that the development of smalleur radio networks in the countries concerned makes a substantial contributlor to the execution of this immense task and e contribution, moreover that costs governments so

All this certainly explains the Importance of the amateur service in the life of our Union, which, as I imagine you all know, has its own amateur etesion in the headquarters building, the call a-cn of which as 4U1ITU

In this connection, I am happy again to express dete aggipment and beautiful furniture they recently offered to the International Amateur Radio Club. This equipment and furniture, added to what our club a ready had, have raised the Union headquarters smateur station to the standard that belits

As In the case of TELECOM 75, radio amateurs will be given an opportunity of taking an part in the third World Telecommunication Exhibiton, TELECOM 79, to be held in Gentive from 20 to 25 September, 1978. So you are all invited to participate in one way or another in this great event and I sernestly hope to be able to welcome the largest possible number of delegations of radio smaleurs from all over the world. During TELECOM 78, the 22nd of September will be specially set solds for a world-wide gathering of amsteur radio face

I would not like to conclude this brief has of the activities carried out at ITU Headquarters in connection with amsteur radio without mentioning that many ITU staff members and a large number of delegates to our conferences are radio amalours

I have noted with plassure, when looking throug the technical reviews, of ameteur radio societies, that they have stready embarked upon active preparation for the World Administrative Radio Conference to be held in 1979. We cannot, in my view, begin too early to give serious thought to the problems concerning the amateur service, and Indeed all the other radio services, which will be re-sed at that conference.

This admin strative conference will be a par-Louisity Important one, since it will be the first since 1959 to deal with the radio frequency spectrum as a whole. All the administrative radio porferences since that date have had a limited agenda relating specifically either to space radio-communications, the Agronautical Mobile Service, the Maritime Mobile Service or broadcasting

You will reed by understand that it is impossible for me to make the elightest forecast as to the way this conference will go. One thing is pretty sure, however, namely that the problems it has to face will be highly complex it would therefore not be amiss for me to emphasize the care you should take to present to your national administrations ery wishes or requirements you have to formulate the most corvincing manner possible. Nobody can tell what will come of it, the very most I can say is that more often than not when people allocations as "good' they mean that the degree of dissetisfaction a roughly the same for the users the different services. But I am convinced that the hef-century that has gone by has amply demonstrated the Importance of the part played by radio amateurs and that once again you will have the sympathy of the conference on your side It is understood that Mr Mull will be attending the special CCIR Reg on 3 Seminar in Sydney early In April

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LETTERS TO

THE EDITOR

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The Editor.

Deer Str

Congratulations on the publication of your Decemspecial Novice issue, which I am sure will be more than appreciated by all past and future successful Novices. The more technical edvice in gaining their full AOCP in the very near future So we say thank you and lean up the good work Your article on Harry Alderson VKSNSR, Dacember Issue of the AR. Impressed me very much as we both have something in common, being around the same age group. Also being a retired ex-servicemen and a wireless operator during the Second World War. My army life began by being called into the ermy as a volunteer signal specialist as I was capable of Moran aneed around 20,26 words a minute and could also read the sounder used by the PMG Department, We had to Instruct women (AWAS) and man how to send and receive Morse code, so therefore I became a W/T instructor and operator

Now that there seems to be more ax-servicemen wireless operators getting their Novice Licences, one may wonder if it is possible for us to set up a home defence communications unit in each State This would set up a network of communications around Australia. Most of the ex-servicemen are ratired and this would give them some satisfaction in life. Something could be organised as we have the edulational and know the properties with a little polishing up, and we would not be wasting good talent that has taken years to obtain Ex-service-men in each State should get together and form a club with the aid of the AR. What do you think? is it worthwhile?

Kindest regards and congretulations on a fine AR iournal

Yours sincerely, H. C. Harmer VICSNHH.

The Editor

Dear Sir I would like to thank the Taxmanlan Division. Launcesion Branch, of the WIA for the kind hospitality they extended to me while I was in Lauriceston holidaying at Christmas time, I took my converted CB rig over to see what was doing on 10 metres, but my operating was very limited due to local area and poor antenna set up and only made two contacts New Year's Eve, one in the morning and one in the alternoon. The latter, lan VK7fC, invited me to the local WIA New Year's Eve barbecue, which I gladly accepted as I was on my own and looked like having a pretty quiet New Year Ian called at the hotel for me and took me out to the barn where the barbecus was being held, he also provided me with food. He introduced ms to Tony VK/CCC, who made ms very welcome, and I was soon introduced around. I had a very enjoyable time. It made my day and aith

only had two contacts it certainly was worth carb ing the rig over They seem to be very active and ing the rig over They seem to be very some und wall promised, the Launcester Branch, and I would like to take this opportunity of wishing them all the best for the New Year. If you are ever down faunceston way, look them up, they'll make you wery welcome. Thanks apain, lan and Tony

Yours sincerely. Frank Doblesse WYSHILL

Holbrook, N.S.W 2644

13 Bowler Street,

29/12/78

Dear Sk. I am a regular listener to the rightly CW trans-missions to further my knowledge to obtain the

MOAC I would like to thank the people who make this possible and the effort they put into this

However, in short, I would like to make a suggestion Like myself, many others have aut previous exams and have falled because of IYU for the learner

i would like then to suggest if at all possible that at least half the transmiss on out to all he we Yours falthfully,

Pater Dor.

12 Balley Street Bairredale 3875. 21st January, 1979.

The Editor. Dane Ser

The Editor.

I am writing to correct certain rumours about production of the Atlas 350XL Amateur Band Transceiver. One of our so-called reputable dealers for multifatious brands of squ pment has seen 'it to state that the 350XL has been withdrawn from production. As an Atlan dealer I must state that this is simply not true. Earlier this month I received two 350XLs from Californ's and by the time this poss to print they will be in their owners' hands. Atles are, however, concentrating on production of a new, third, and cheaper model and being a small company, have delayed production of the Atlas 350XL white build ng up stocks of the small new model All three models will continue to be evallable in future

Another matter deserves clearing up. There is no sofe Australian distributor for At as, The openpany has appointed only designs in Australia all with equal buying rights.

It is notable that this misleading and deceptive publicity did not appear in "Amaleut Radio" Yours elocerely.

Edwin R Rooms, B.Comm (Melb.) VK3NRR/Z?? Yachtamen, Dealer for At as Radio

9 Tellers Avenue Mt Gambier, S.A 5290

The Editor. Dear Str.

The Editor

P.O. Box 173.

19/1/1070

Prahran, Vic. 3181

Some time ago (started a collection of postage stamps specialising in electrical and electronical This includes radio, television, computing, tele-phones, telegraph cables and of course ITU stamps

I have now arrived at the stage where my collection is becoming difficult to add to from the sources available to me in the country If any of your readers could help me it would

be most appreciated. Ivan Huser VKSDV

> Bank Lane. Quirindi, N.S.W 2343

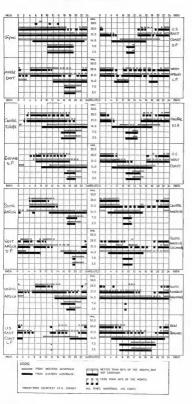
Detr Sir. In view of the very crowded conditions prevailing on 80m at present, and the fact that CB is now going UHF, how about our Novices being permitted to use a portion of the 2m band, instead of going UNF with the CB crowd Let us keep our hovices active and on the right track

Yours kindly B Emerson VK2NSE

Page 52 Amateur Radio March 1979

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



CONTESTS

Wally Watkins VK2ZNW/NCU Box 1065, Orange 2800

3/4 20/11

ARRL DX PHONE CONTST COMMONWEALTH CONTEST

17/18 ARRL DX CW CONTEST 24/25 CQ WW WPX SSB CONTEST BARTG RTTY CONTEST

April: 7/8 POLISH "SP" CW CONTEST 21/28 POLISH "SP" SSB CONTEST 28/29 DUTCH "PACC" CONTEST

28/29 SWISS "H 25" CONTEST HELVETIA 26 CONTEST

April 28-20, 1500-1700 UT.

Rules: All bands 1.8-28 MHz. CW or phone. Exchange: RS(T) + serial from 001. Swiss stations add the Canton abbreviation, e.g. 57(9) 001 ZH,

Score: Each contact with a HB station counts 3 points. Each station can be worked once per band, either on CW or phone. The multiplier is the sum of the Swiss Cantons worked on each bend, making a possible of 25 per band.

Logs to: TM USKA K. BINDSCHEDLER, HB9MX, Strahleggweg 28 8400 Winterthur, Switzerland, postmarked not later than 30 days after the

1979 CALL ROOK

The next issue of the WIA Amateur Call Book is now under consideration. Up to date information of the various clubs are required urgently, Kindly forward details to the Editor (Call Book), P.O. Box 2611W, Melbourne 3001, by 30th April 1979.

HAMADS

- Eight lines free to all WIA members. \$9 per 3 cm for non-members.
- Copy in typescript please or in block letters to
- P.O. Box 150, Toorak, Vic. 3142. · Repeats may be charged at full rates. · Closing date; 1st day of the month preceding
- publication. Cancellations received after about 12th of the month cannot be processed. · QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book

FOR SALE

Urgent Shack Cleanout, Mosley TA 33 Jnr., as new with instruction sheet, 52 ohm cable, \$150; Halli-crafters HT37 10-80m, SSB/GW, AM Tx, uses pair 6145B tubes, complete with dynamic mike and owner's manual, 100W PEP output, excellent cond., \$150; Hallicrafts FPM-300 250W PEP input, 240V AC or 12V DC, SSB, CW Tx, 10-80m Rx, all solid state - this transceiver is made in USA and is very cheap at \$450 (owner's manual Included) John Berry, 40 Grosvenor St., Woollahrs, NSW 2025 Ph. (02) 389 6455 Bus.

Pye FM738D, 25W, FM low-band VHF Carphones fully solid state except Tx finals, suit commercial service or conversion to 6 FM, mice and finals missing otherwise complete, \$40 each, Jeff VK3ZJS, Ph. (03) 337 1536 A.H. Swan 500C Single Sideband Transceiver, operates on 80, 40, 20, 15, 10m, input power 520W PEP, com-

plets with power supply and matching external VFO, also complete set of spare tubes, as new, the lot \$450. VK4KS. Ph. (07) 353 1968. mm m: env. env. VN453.5. Ph. (VI) 303 1958. FT, as mise, complete with Yeasu gutter grip HF whips for 40, 20, 16m, \$500, ONO; Kenevod REZEOZ Zn portable Txer rocks for R2, R7, R8, SIM 40 charger, new nicads, \$200, ONO; Yeasu YU-844 desk mike, \$30, VK2BJP, QTHR. Ph. (930) 21 1829 Bes., (950) 25 4580 A.H. Icom IC201 2m Town originally designed to operate 146-148 MHz but modified to cover 144-145 and 146-147 MHz, has 600 kHz offset for repeaters and operates on FM/SSB/CW, \$300; Astro 200 digitally tuned 80-10m tow, fully solid state with power output approx, 160W, Impeccable, In original carton, \$700: KP202 2m FM Toyr In places with RX working xtls for 6 channels, \$70. Ph. Michael (03) 52 4941 Date

432 NHz 10W SSB Transceiver, Belcom 430, as SZES VKIVP OTHE Ph (088) 48 5882 A.H. 901 DM Transceiver, 6 months old, original packing, English handbook, wired 240V AC \$1200 ONO Bringden VK3YFJ. Ph. (03) 870 0640 or (03) 560 5233 Bus

Duntron Linear MLA2500, \$875; Dalws processor RF550, \$110. Both slight use only, as brand new. J. Moyle VK4ZT, QTHR, Ph. (079) 73 6580. Yeosu \$200: SSB Rx FR100B, ham bands 3.5 to 29.5 MHz. \$200: SSB Tx FL100B, \$150; with manuals in

English, Note: This equiment uses valves, VK1ML. Trio T8500 80-10m Transceiver, S/S PSH 2 x 6146 finals, in good condition, \$375; Kenwood TV402, 2m transverter for TS520 or 529, as new, \$200,

ONC: AWA MR20B on 52.525 MH2 FM, goes well, with remote control unit, \$45. VKCNG. Ph. 0541 80 2023 A H Yeesu DC 200, power supply for FT290, complete with cable, manual, purchased new and few hours

Kraco 30 ch. 888 Radio, fully converted to 10m, alider, etc., \$100: Hyoain 18 AVT/WB 30-10m trap few months old, \$100, Mike VK2NOW. Ph. (02) 371 9043 FT788 Transceiver, complete with mic. and manual

good condition, little used, 30W PEP-10g W PEP, 240V AC, 3.5, 7, 14, 21, 28 MHz, crystals for Novice bands, cost \$450, sell \$300. VK4NHW,

Icom 202E SSS Trx, as new, complete in packing, 3 times, now have TS700, extra xtal price Pater VK2DAB, Ph. (02) 089-82 5001 Bus. Peter (02) 82 5163 A H

Kenwood TS-829S, Inc. DC-DC converter, service manual, \$950; AT200 serial tuner, \$150; SP820 sx-lernal spasker, \$50; Hidaka VS-33 tri-band Yegi. ternal speaker, S90; micrase varies varies in the boom, S240, inc. balan; Shure 444 50k ohm mic., \$50; Shure 4014 50k ohm mic., \$50; Shure 4014 50k ohm mic., \$25; Pajomar engineers' Rx noise bridge, 1-100 Micras 570; Hustler MO-2 mast, BM-1 bumper mount, 80m, \$70; Hustler MO-2 mast, 80m, \$70; Hustler MO-2 15m, 10m, resonators, lot \$95; Yassu TVI filter FF-50 DX, \$25; Kenwood TVI filter LF-30A, \$25; all in excellent cond. VKSNPM, 8 Macintosh SL, Mt. Gambler. Ph. (087) 25 2407.

Shack Clearance, going overseas, lots of Items. VK2ZGF, QTHR. Ph. (02) 487 1353 week-ends. Brake C-line T-4XC 180-10m, xtals fitted, spars tubes, Drake AG4 power supply, Shure 444 deak mic., R-4C Rx 160-10m xtals fitted, plus 10 extrs. 3 CW filers, noise blanker, MS-4 speaker, W4 R meter, Swan 1200-X linear 4X 8950 grounded. all first class cond., all manuals, \$2000 complete Drake TR3 Towr, Drake power supply, mic. and manual \$350: GDO Delice transdictor W8-200 \$350; cost \$119, sell \$75, used 4 times; Realistic DX-150B polld state comm. Rx with speaker, \$100; Mat-nunace voltage slide regulator, 0-280V, \$0-60H, 4.2A. class, \$50. Must sell, offers considered. Alick QTHR. Ph. (02) 918 3560. FT3010 Transceiver with microphone and 5A power

Photographs for AR

supply, operating perfectly in 20W mode, 160W linear needs servicing, \$600. VK2PV, QTHR. Pb.

(02) 371 7681

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Send them in - NOW

Crystels for Ken KP202 Transceiver, forward a peaters 2 to 8 and reverse 8, \$6 per pair or \$40 time for VKSKT OTHR Ph 650 79 2002 A H Johnson Viking CB Transceiver, mod. immac, cond., coverage 28,300 to 28,620, 20 PEP \$150, ONO; also I]near amplifier, 80-16m, solid state, with 12 d8 pre-amp 250W PEP output, excellent cond., \$150, ONO. Ph. (03) 743 6708 TEN-TEC Century 21, Model 570. CW Transcolver. perfect condition, features 70W input all bands 3.5 to 28 MHz with full CW break-in, \$350. VK3XU,

OTHR Ph (03) 725 0824 TR7480A, with Hustler 5/8 whip and trunk lid mount, with operator's and maintenance menuals, less than one year old, in excellent cond., \$370. John Proctor. Ph. (02) 624 6675.

Coston. Rx RAAF ARZI, AM, SSB, NBFM, CW, ZZ Inbes, var. AGC, NB, 1.4-26.3 MHz cover, 240V, \$55; Novice 60m Tx 10W DC AM, good audio, 2 1 x CW, 1 x Ph., 240V AC, \$50; 40-80m Rx board, just add PSU and audio for complete unit, 455 kHz IF. \$20: 2m PA. discast box. 10W up to 45W. 12V DC, uses 2N6084 trans., \$45. VK2QF, Hargraves, NSW 2850 TV Sayo DeLuxe, Model 12-T2241-1, 12V DC

AC, 12 in. screen, 300 ohm and 75 ohm anl. I/P and whip, never used, as new, provision for VHF tuner, must sell, \$80; 5 el. 2m Yagi, brand new, 5y/2m, J beam, assembled with balun, \$35 present retail price), B. R. Kendall VK3ZDM, QTHR. Db /075 741 9389 4 M

414 in IO TV Camera Chain complete working spares, \$400, ONO; also garage sale of surplus equipment. mainly ATV. Barry Gerdes VK2ZAH, Ph. (02) 47 4421

OBITUARY

Mr. ERIC E. CORNELIUS It is with deep regret that we record the passing of snother OT - Eric Cornellus, Eric passed away poscefully at home or of January and his storehouse of

knowledge and advice will be sadly missed Eric obtained his AOCP (No. 1635) In 1836 and was often heard pre-war from his QTH in Nedlands. As wall as his does interest in electronics, Eric was keenly i terested in photography, music and high quality sound (long before the ki-fi era began) and, in the early 1940s, was buss building his own sound equipment and processing his own films - his passion technical excellence being reflected in this work. An electric organ built in the late 1940s was a source of joy to him and his family.

Around the 1950s Eric combined his talents in sound and photography in new-lound interest — Television, With converted cameras and technical knowhow he produced a complete home grown closed circuit TV system, which was a monument to his ingenuity and amazed his many friends. This work was culminated in a series of articles that appeared in AR is 1958.

Eric has a distinguished record of over 40 years with the PMG engineering departnt (now Telecom), commencing in November 1938. His career encompassed broadcast studio, transmitter and telephone engineering and, at the time of his passing was in charge of the Trunk Service Tech. Centre —an organisation charged with the sorting out of the hard technical problems in multi-channel touck line evetems for the whole of WA.

His cheerful disposition, his willingness to help and his technical counsel will long be remembered by his workmales and amateur triends alike,

To his wife Ruth, and his daughters Jocelyn and Lestle, we extend our deepes sympathy.

Contributed by Frank Beadle YKSFW.

SHENT KEYS

It is with deep regret that we record the pession of -

Mr. P. R. ALDRIDGE Mr. E. E. CORNELIUS Mr. W. C. BLAKELEY VKSNZA WEED

Wanted for ADCP candidate, comm Rx. Ken KP202. Icom IC22S, Enquiries to Peter Willmott, Ph. (03)

WANTER 779 1809 SSTV Robot 70A Monitor with £26 or similar longpersistence CRT, ham built or Imported, in good working order. Details to George, PO Box 366. Surlera Paradise, Old., or ph. (075) 39 9111

shile Transceiver, HF (nt lenst 20-80m), for use in August on expedition retracing Forrest's crossing of Kimberleys 1979. Typical gear required is FT7 or Icom. Kenwood mobile, near new and reliable all or nearly all solid state; whips and associated hardware required. L. Pesstey VK2BLP (ex WW2 RAAF), QTHR, Ph. (049) 54 9488 (school hours). 2m or FM Transceiver and beam antenna, also slow fast scan TV equipment, John VK2BYK, Box

167. Penrith 2750, Ph. (047) 21 2622. Parts from or a parity wrecked RDA ARSSD Rx. Colin Gracie. PO Cavendish 3408.

Barlow Wadley Loop XCR30 Mk. 2 communication Rx in good cond. VKSNDT, L50703, Ph. (085) 84 2150 Ken KP202, Icom 228 or 22A, G. White VK2YJO. (02) 55 1793 A.H., or (02) 50 9328.

Q-Multiplier KW\$10, plus instruction sheet, for use with KW2000E. VK3SV, 40 Hardwicks St., Balwyn, Vic. Ph. (03) 80 2330. Circuit Diagram and conversion into for a Plessey-Vintee MTR30A to 2m FM. Frank Brockbank VK2AFZ 180 St. Johns Rd. Cabramatta, NSW 2165. TRADE HAMADS

XITEX "Glass Teleprinter", needs only a keyboard and TV set to originate and display 18 lines of 64 chars; switchable for 45.48 Baudot-110/300 ASCII, 20 mA or TTL interface; full U/L and Greek charin ASCII mode, eddressable cursor; feed on-board PSU 9-12V AC or plug into an S-100 slot; micro computer controlled pre-programmed: full kit. \$169 including delivery and sales tax; suitable keyboard From The Micro Shop, Box 207, Gewler,

QSL Cards, Log Books, Contest Log Sheets. Send a 20c stamp for samples and prices to Linda Luther VK4VV, PO Box 498, Nambour, Gld. 4560.

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ADVERTISERS' INDEX

38

49

43

20

29

39

KA

13

13

.

12, 22

21, 55

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Page 54 Amateur Radio March 1979

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The IC211's synthesizer stens are displayed, with positively no firm

Maximising 4MHz – the full 2 metre band – with fully synthesized multi-mode operations, the IC211 is the most advanced, highest quality 2 metre transceiver available anywhere. The IC211 comes complete with IC003's single-knob frequency selection and two divisal VEO functions, transfer features at no extra cost.

The large weighted flywheel knob measured with low friction hall bearings it used to drive an optical chapper to provide pulses to the synthesizers LSI, which shows a full 7 digit readout. A breaking mechanism, which operates electrically, engages to provide a minorial feel at slow speeds: and a "dial lock" button holds the reading at the time it is pushed, even though the knob continues to rotate.

The IC211 incorporates computer compatible interface via the 24 pin accessory socket on the rear panel which enables PIA connection for the microprocessor buff.

The C.2.1.1 is youtered steps are diagnous, white positivery not time hag, backfind our inceretainty in display stability, in increments of 1600 kt. or 3 KHz from 144–146 Mkz, and in 5 KHz from 146–149 Mkz for PM operation. Any offset from 10 KHz through 4 MHz for repositer use can be programmed.

The IC.2.11 contains both 260 were and the 13 6rde power supplies and has a built-in high SWR autopower control. Variable output money controllers to the IC.2.11 is usussfile. On the proceedings of the 160 was a built-in high SWR autopower control. Variable output

power contributes to the (C.213 versatiny, Oripit netween 500 millionatis and 10 water may be front panel controlled on Fi.

More of the maximiser's built-in standard features include: a pulse type IF noise blanker, front panel discriminator meter, 5WR meter, VWR with a distribute VOX with a distribute VOX

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446.3232 43.7981 32.2644 82.3581 The new RM-3 remote controller is microprocessor controlled for direct frequency dial-up, scan and memory functions. Price \$169.

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